

HELMINTHOLOGICAL ABSTRACTS

incorporating

BIBLIOGRAPHY OF HELMINTHOLOGY

COMPILED FROM WORLD LITERATURE OF 1955



Prepared by the

**COMMONWEALTH BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)**

Published by the

COMMONWEALTH AGRICULTURAL BUREAUX, FARNHAM ROYAL, BUCKS., ENGLAND

HELMINTHOLOGICAL ABSTRACTS

Vol. 24, Part 2

1955

PRINCIPAL CONTENTS

GENERAL SUBJECTS

Anthelmintics, 59b, 59c, 67d, 75a, 79a, 81a, 82e, 85b, 95b, 110b, 128a, 130d, 159a
164bc, 165e, 168a, 168b, 169b, 169c, 169d, 169e, 169g, 170a, 173a.
Bionomics, 68a.
Control, 96a, 102a, 107a, 110c, 122i, 140d, 140h, 140k.
Cytology, 89c, 92a, 92d, 133d, 149a, 149b, 149c, 163a, 163c, 175b.
Epidemiology, 58a.
Immunity, 139b, 143 o.
Life-histories, 82b, 89b, 92b, 122b, 122c, 122f, 122j, 122n, 163h, 174e.
Morphology, 55b, 55c, 82a, 89c, 108a, 122m, 143a, 163b, 163h.
Nematicides (plant eelworm), 137a, 139c, 139e, 139i, 139j, 139k, 140b, 140e, 140n,
153a.
Pathology, 82d, 174d.
Physiology, 76a, 87a, 87b, 101b, 122e.
Serology, 101a, 118a.
Technique, 67g, 82c, 114b, 122 o, 122p, 122q, 122y, 133b, 140c, 140f, 140j, 143g,
162b, 172a.
Toxicity, 95a, 166b.
Treatment, 109a, 123a, 140 l.

HOST DISTRIBUTION

Animals of Economic Importance

Horse, 166a, 171a.

Cattle, 61a, 73a, 93a, 99a, 111a, 111c, 115a, 116b, 136d, 154a, 161b, 168a.

Sheep, 71a, 110a, 116a, 143q, 165d.

Goat, 110a, 114a.

Poultry, 168b.

Man, 56a, 60a, 98a, 125a, 156a, 164a.

Other Vertebrate Hosts

Mammals, 85f, 96b, 122x, 133c, 165a, 165b.

Fishes, 112a, 122k.

Plants, 101e, 103a, 104a, 134a, 139a, 139b, 139d, 139f, 139g, 139h, 140a, 140g, 140i,
140m, 143 l, 148a, 158a, 160a, 162a.

Free-living eelworms, 143e, 145h, 150b, 175a.

SYSTEMATICS, NEW SPECIES etc.

Trematoda, 63b, 63d, 89d, 120a, 122u, 122w, 143b, 143f, 146a, 150a, 163d, 164n.

Cestoda, 55a, 63a, 122d, 122 g, 122h, 122v, 138a, 143c, 143h, 143m, 163g.

Nematoda, 56b, 63c, 63e, 63f, 63g, 67b, 89a, 126a, 127a, 143a, 143d, 143e, 143n,
150b, 164r, 174a, 174b, 174c, 174e, 175a, 176a.

GEOGRAPHICAL DISTRIBUTION

EUROPE

Denmark, 160a.

Germany, 132a.

Italy, 65a.

Spain, 145h.

Switzerland, 154a.

Yugoslavia, 167a.

AFRICA

South Africa, 102a, 156a.

Tanganyika, 164a.

ASIA

India, 91b, 111b.

SOUTH AMERICA

Bolivia, 140g.

https://archive.org/details/helminthological-abstracts_1955_24_part-2

HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1955

Vol. 24, Part 2

55—Acta Parasitologica Polonica.

- a. CZAPLIŃSKI, B., 1955.—“*Aploparaksis stefaniskii* sp.n.—nowy gatunek tasiemca z rodziny Hymenolepididae Fuhrmann, 1907 u kaczki domowej (*Anas platyrhynchos* dom. (L.)).” 2 (15/20), 303–318. [French & Russian summaries pp. 315–318.]
- b. DRYGAS, M. & PIOTROWSKI, F., 1955.—“Z morfologii *Trichuris sylvilagi* Tiner 1950.” 2 (15/20), 343–359. [English & Russian summaries pp. 353–359.]
- c. WERTEJUK, M., 1955.—“O larwach inwazyjnych nicieni żołądkowo-jelitowych owiec i ich rozpoznawaniu.” 2 (15/20), 361–404. [English & Russian summaries pp. 400–404.]

(55a) In *Aploparaksis stefaniskii* n.sp. from domestic *Anas platyrhynchos* in Poland there are numerous rows of spines on the edges of the suckers. These spines do not occur in other species of this genus except in *A. endacantha* Dubinina, 1953, which differs in the arrangement of the reproductive organs and the shape and length (72μ to 74μ) of the hooks. *A. stefaniskii* is differentiated, particularly from *A. birulai*, *A. elisae*, *A. veitchi* and *A. linstowi*, by its body length of 231 mm. to 258 mm., by the hooks which are 24.5μ to 26.7μ long and by the spindle-shaped eggs. The cirrus pouch is 234μ to 328μ long and 40μ to 58μ in diameter, and its base reaches the longitudinal excretory canals but rarely crosses them.

G.I.P.

(55b) From specimens found in *Lepus europaeus* in Poland the authors give a full description of males and females of Tiner's *Trichuris sylvilagi* which is broader than and twice as long as *T. leporis*. Other differences between these two species are that in *T. sylvilagi* the testis forms 16 to 24 zigzags instead of 27 to 30, the anterior part of the cloaca is S-shaped not straight and the vulva opens below and not at the level of the junction of the oesophagus and the intestine.

G.I.P.

(55c) Wertejuk describes, with brief notes on their biology, the infective larvae of nine gastro-intestinal nematodes of sheep in Poland and gives an identification chart based mainly on their morphological dissimilarities. The length of the tail of the sheath is used to divide the larvae into three groups (lack of a sheath eliminates *Strongyloides papillosus* which has, moreover, an exceptionally long oesophagus). Short sheath tails and 16 intestinal cells are found in *Ostertagia circumcincta*, which has a bluntly rounded tail and no mouth capsule, and in *Trichostrongylus colubriformis*, which is larger with one or two knobs on the tail. *Cooperia oncophora* and *Haemonchus contortus* have sheath tails of medium length and 16 intestinal cells, but *Cooperia* larvae are larger and have a blunt larval tail whereas *Haemonchus* larvae have pointed larval tails: in addition *Cooperia* larvae have “two points strongly deflecting light rays” in the buccal capsule. The remaining larvae have long sheath tails. *Nematodirus spathiger*, the largest of these nine larvae, has eight intestinal cells and three protrusions of the larval tail: *Bunostomum trigonocephalum*, the smallest larva, has 16 intestinal cells and a funnel-shaped mouth capsule: *Oesophagostomum venulosum* and *Chabertia ovina* with 32 intestinal cells each are difficult to separate but *O. venulosum* is larger, the intestinal cells are more triangular whereas in *C. ovina* they are squarish and in most cases there is a thickening and dotted ornamentation near the sheath's excretory pore which is absent in *C. ovina*. G.I.P.

56—Acta Tropica. Basle.

- a. BAER, J. G., 1955.—“Un nouveau cas de parasitisme d'un enfant en Afrique orientale par le cestode *Inermicapsifer arvicanthidis* (Kofend, 1917).” 12 (2), 174-176.
- b. SARWAR, M. M., 1955.—“On a new species of *Trichuris* from okapi.” 12 (2), 176-178.

(56a) Baer reports the third occurrence in African children of *Inermicapsifer arvicanthidis*, a common tapeworm of African rodents south of the Sahara. The specimen came from a child, three and half years old, in Arusha, Tanganyika. R.T.L.

(56b) The whipworm from the okapi, identified by Leiper as *Trichuris giraffae*, by Van den Berghe as *T. skrjabini* and by Baer as *T. discolor*, is now described and illustrated as *T. baeri* n.sp. The length of the cloaca is 4.0 mm. to 5.2 mm. and the distance from the posterior end at which the spicular tube joins the cloaca is 3.2 mm. to 3.7 mm. The vagina, which shows an inconspicuous protrusion at the vulva, is preceded by two proximal loose curves. These are preceded by a highly characteristic and constant dorsally flexed curve showing a dilated egg reservoir. R.T.L.

57—Acta Tropica. Basle. Supplementum.

- a. GEIGY, R. & HERBIG, A., 1955.—“Erreger und Überträger tropischer Krankheiten.” No. 6, xxiv + 472 pp.

(57a) This work deals only with the agents and vectors of the tropical diseases of man. *Wuchereria*, *Dipetalonema* and *Mansonella* are only mentioned in the tables listing diseases and vectors while twelve pages are devoted to *Onchocerca volvulus* and its vectors. R.T.L.

58—Advancement of Science. London.

- a. SILVERMAN, P. H., 1955.—“The biology of sewers and sewage treatment. The survival of the egg of the ‘beef tapeworm’, *Taenia saginata*.” 12 (45), 108-111.

(58a) Silverman points out that in Britain most of the persons infected with *Taenia saginata* live in urban areas and have little or no direct contact with cattle. Consequently some other epidemiological factor must operate in the spread of *T. saginata* and *Cysticercus bovis*. He concludes from his own observations that sewage effluent contributes very largely to the dispersal of viable ova, either directly by the use of sewage sludge as fertilizer on pastures, or indirectly by forming an important source of food for birds, particularly seagulls; as *T. saginata* ova remain viable after passing through the alimentary canal they can thus become dispersed over a very wide area. S.W.

59—American Journal of Diseases of Children.

- a. FREEMAN, L. C., BRADY, F. J., KESSLER, A. D. & SCOTT, R. B., 1955.—“Observations on trichinosis. Report of a community outbreak.” 89 (2), 194-198.
- b. HOWIE, V. M., 1955.—“Ten-day treatment of pinworm infection with piperazine.” 89 (2), 202-203.
- c. RACHELSON, M. H. & FERGUSON, W. R., 1955.—“Piperazine in the treatment of enterobiasis.” 89 (3), 346-349.

(59a) Although *Trichinella* infections are present in about 16% of humans autopsied in the U.S.A., clinical trichinelliasis is not common owing to the dilution of infected with uninfected meat in modern packing stations. The outbreak now reported occurred in a community of 21 persons living in four houses in a rural district of Virginia. Twelve persons showed clinical symptoms. There was eosinophilia in 14, a positive skin test in seven and a positive precipitin test in ten persons. The outbreak was traced to pork sausage from garbage-fed pigs. R.T.I.

(59b) Piperazine hexahydrate was administered in dosages of from 56 mg. to 133 mg. per kg. body-weight, daily for ten days, to 58 enterobiasis patients whose ages ranged from 11 months to 33 years. 84% were cured. Five showed toxic symptoms which disappeared when the drug was discontinued. R.T.L.

(59c) An average cure rate of 97.3% was obtained in 150 *Enterobius* patients who received an orange-flavoured syrup containing piperazine citrate in an amount equivalent to 100 mg. piperazine hexahydrate per c.c. or 500 mg. per teaspoonful. The medication was given for seven consecutive days, followed by a rest period of one week, and then a second course for seven days. R.T.L.

60—American Journal of Hygiene.

- a. JACHOWSKI, Jr., L. A. & OTTO, G. F., 1955.—“Filariasis in American Samoa. IV. Prevalence of microfilaræmia in the human population.” 61 (3), 334–348.

(60a) The inhabitants of American Samoa live either in large open villages in which the houses are set in clearings, or in small diffuse bush villages where the houses are in or very close to the undergrowth. The non-periodic microfilarial rate in the former, where domestic transmission cannot occur owing to the absence of vectors, is significantly lower than in the latter where the homes are located within the vectors' habitat. The conditions are therefore not analogous to those of the domestic transmission of the periodic *Wuchereria bancrofti* by *Culex fatigans*. R.T.L.

61—American Journal of Veterinary Research.

- a. DORAN, D. J., 1955.—“The course of infection and pathogenic effect of *Trichostrongylus axei* in calves.” 16 (60), 401–409.
b. SCHWABE, C. W., 1955.—“Helminth parasites and neoplasia.” 16 (60), 485–488.

(61a) In an experiment in which 10 calves three to six months old were each given 50,000 to 1,500,000 trichostrongylid larvae, the prepatent period for *Trichostrongylus axei* in single and multiple infections was 19 to 30 days. The maximum egg count usually occurred 26 to 30 days after patency. Two of the calves showed resistance to heavy reinfective doses four to five months after the egg counts from the initial infection had subsided. When calves received single or multiple doses of 750,000 or more larvae, there was evident loss of weight and appetite, weakness and watery faeces. A calf was *in extremis* 59 days after receiving one million larvae and one died 49 days after receiving one and half million larvae. Although there were no clinical symptoms when less than 750,000 larvae were administered the mucosa of the abomasum showed ringworm-like lesions, inflammation and corrugation, sloughing of the epithelium, hyperaemia and lymphocytic infiltration. R.T.L.

(61b) Schwabe reviews the literature since 1937 which has dealt with the association of helminth parasites and cancer and concludes that only one causal relationship has so far been satisfactorily established, viz., that between larval *Taenia taeniaeformis* and sarcoma in the rat. Although there appears to be a similar connection between *Spirocerca lupi* and sarcoma in the dog, this has not been produced experimentally while that between schistosomiasis and neoplasms in man seems to have some statistical basis. R.T.L.

62—Anais do Instituto de Medicina Tropical. Lisbon.

- a. CAMBOURNAC, F. J. C., GÂNDARA, A. F. & PENA, A. J., 1955.—“Inquérito sobre oncocercose em Angola. A—Estudo realizado nas zonas de Catabola (Nova Sintra) e Camacupa (Vila General Machado).” 12 (1/2), 5–23. [English & French summaries p. 23.]
b. TRINÇÃO, C., FRANCO, A., GOUVEIA, E., NOGUEIRA, A. R. & COUTINHO DE OLIVEIRA, M. P. N., 1955.—“As porfirinas eritrocitárias na ancilostomíase.” 12 (1/2), 25–28. [English & French summaries pp. 27–28.]

- c. TRINCÃO, C., PINTO, G. L., NOGUEIRA, A. R., GOUVEIA, E. & PARREIRA, F., 1955.—"A eliminação urinária de tiamina pelos indígenas da Guiné Portuguesa, normais ou doentes de ancilostomíase, filariose e tripanosomíase." 12 (1/2), 29-33. [English & French summaries p. 33.]
- d. JANZ, G. J., PINTO, G. L., FRANÇA, C. S. & BARBOSA, J. C. L., 1955.—"Estado de nutrição e infecção por Ancylostomidae." 12 (1/2), 35-42. [English and French summaries pp. 41-42.]
- e. JARA, A. B., 1955.—"Grau de tolerância para os Ancilostomidae na população escolar de Vila Henrique de Carvalho." 12 (1/2), 43-64. [English & French summaries pp. 63-64.]
- f. LEITE, A. S., JANZ, G. J., GÂNDARA, A. F., RE, L., CASACA, V. & CARVALHO, A. M. DE, 1955.—"Relatório da Missão do Instituto de Medicina Tropical a Angola (1954) em colaboração com a Missão de Prospecção de Endemias em Angola." 12 (1/2), 219-254.

(62a) In a survey of 1,047 natives in the regions of Nova Cintra (Catabola) and Vila General Machado (Camacupa) in Angola, 32% presented microfilariae of *Onchocerca volvulus* and 43% were clinically suspected of onchocerciasis; 54% were positive for Mazzotti's test and 11.4% suffered from eye defects. Simuliids were collected with human bait from waterways in the region and of a total of 972, all of which were found to be *Simulium damnosum*, 32% carried the microfilariae. M.MCK.

(62b) The erythrocytic protoporphyrin and coproporphyrin contents in nine cases of ancylostomiasis ranged respectively from 46.9 µg. per 100 ml. to 211 µg. per 100 ml. [the summaries state 221 µg.] and from 0.2 µg. per 100 ml. to 2.8 µg. per 100 ml. M.MCK.

(62c) Trincão *et al.* determined the hourly urine excretion of vitamin B₁ in 41 natives in hospital in Portuguese Guinea. In 11 hookworm cases 1.1-23.7 µg. per hour were excreted and only four passed more than 7.5 µg. per hour, which is the minimum indicating adequate vitamin B₁ intake. Seven carriers of *Wuchereria bancrofti* excreted 2.1-8.4 µg. per hour and only one passed more than 7.5 µg. One of a group of six who were free from parasites passed 8 µg. per hour and the remainder 0.6-4.57 µg. The presence of parasites therefore had little effect on B₁ deficiency. In spite of these low values, the patients were probably fed better than most natives. In hookworm cases the administration of vitamin B₁ with the usual iron did not seem to improve the treatment. M.MCK.

(62d) Blood counts and blood analyses of 97 Africans given the same diet and of whom 55 carried hookworm without clinical manifestations showed, in those heavily parasitized, a decrease in iron content in the serum, reduced riboflavin elimination, faster sedimentation and an increased leucocyte count. M.MCK.

(62e) A comparative study of the red blood cell counts, haemoglobin, eosinophilia and rate of hookworm infestation in schoolchildren of white, black and mixed races in Angola showed that a deficient diet is the most important factor causing anaemia in the African native. M.MCK.

(62f) In a brief study of 300 individuals at Vila Salazar, Angola, many were found to carry microfilariae of *Onchocerca volvulus*. This discovery led to detailed observations of another 1,000 individuals of whom 574 were found infected. The statistics are analysed in detail and show that 51 had subcutaneous nodules, four elephantiasis and 149 eye defects. Simuliids were collected with human bait over a large area and pupae and larvae were sought in their aquatic habitats. Eleven species of *Simulium* were collected as adults and larvae. *S. damnosum* was present by all the waterways in the area where the population was studied and of 227 female flies captured, 24 carried microfilariae. M.MCK.

63—Annales de Parasitologie Humaine et Comparée.

- a. EUZET, L., 1955.—"Remarques sur le genre *Dinobothrium* van Beneden 1889 (Cestoda-Tetraphyllidae)." 30 (3), 174-192.
- b. TIMON-DAVID, J., 1955.—"*Urotocus tholonetensis* nov.sp. (Trematoda, Leucochloridiidae), parasite de la bourse de Fabricius chez la pie." 30 (3), 193-201. [English summary p. 200.]
- c. FAIN, A., 1955.—"Le genre *Gongylonema* Molin 1857, au Congo belge et au Ruanda-Urundi." 30 (3), 202-218.

- d. FAIN, A., 1955.—"Étude sur les schistosomes d'oiseaux au Ruanda-Urundi (Congo belge). Un nouveau schistosome du tantale ibis (*Ibis ibis* Lin.), *Gigantobilharzia tantali* n.sp." 30 (4), 321-328.
- e. CHABAUD, A. G. & CHOQUET, M. T., 1955.—"Deux nématodes parasites de lémurien." 30 (4), 329-338.
- f. BIOCCA, E. & CHABAUD, A. G., 1955.—"Curieuse structure oesophagienne d'un oxyuride *Dermatoxys probosciphora* n.sp. parasite de *Xerus*." 30 (4), 339-345.
- g. CAMPANA-ROUGET, Y., 1955.—"Sur deux nouveaux genres de spirurides parasites de poissons; discussion systématique des genres voisins." 30 (4), 346-362.

(63a) Euzet has studied a number of specimens of the genus *Dinobothrium* and has concluded that only three species are valid, *D. septaria* Van Beneden, 1889, *D. planum* Linton, 1922 and *D. paciferum* Sproston, 1948. He proposes (i) that *D. septaria* should remain in the Phyllobothriidae, (ii) that *Gastrolecithus* Yamaguti, 1952 should be accepted for *D. planum*, that *G. planus* should become type of a new family the Gastrolecithidae and that this family, although aberrant, should remain for the present in the Tetraphyllidae, and (iii) that a new genus, *Reesium*, should be made for *D. paciferum* which belongs among the prosobothriids because of the cuticular spines and the form of the ovary. He describes and illustrates the anatomy of each and lists their synonyms. S.W.

(63b) Timon-David describes and illustrates *Urotocus tholonetensis* n.sp. from the bursa Fabricii of *Pica pica*. As many as 81 specimens occurred in a single bird. It possesses an acetabulum which distinguishes it from *U. fusiformis* and is differentiated from *U. rossittensis* by the more anterior position of the acetabulum, the position of the gonads, its much larger size and by a number of other characters. The lesions caused by the parasite in the lymphoid follicles of the bursa Fabricii are described. S.W.

(63c) *Gongylonema soricis* n.sp. from *Sylvisorex* spp. and *Crocidura* spp. in the Belgian Congo and Ruanda-Urundi appears to be restricted to the Soricidae as it was not present in 1,000 rodents examined. The new species is easily distinguished from *G. neoplasticum*, *G. brevispiculum* and *G. problematicum*, parasites of Muridae, by its very small size and other characters which are tabulated. Male, female and larva are described and illustrated. Fain reviews the main characters of *G. congolense*, *G. pulchrum*, *G. rodhaini* and *G. verrucosum* and discusses the systematic position of the species of *Gongylonema*. S.W.

(63d) *Gigantobilharzia tantali* n.sp. is described from large fragments found in *Ibis ibis* in the Belgian Congo. There are only three species of *Gigantobilharzia* with a gynaecophoric canal: these differ from *G. tantali* mainly in that *G. lawayi* lacks an oral sucker, *G. acotylea* is about ten times as long, and *G. gyrauli* has the seminal vesicle much nearer the anterior end and its gynaecophoric canal is only about one third as long. M.MCK.

(63e) The female of *Pararhabdonema longistriata* Kreis, 1945 is redescribed from the lemur *Lepilemur ruficaudatus* in Madagascar. The male is described for the first time. It has at the posterior end remarkably developed ventro-lateral ridges and the bursa is unusual in being attached ventrally by a pair of cuticular lobes above the cloaca which prolong the bursal lobes to the ventral midline. This species is most closely related to *Pseudostertagia bullosa* but has a more anterior vulva, a relatively shorter and thicker oesophagus and has the ventro-lateral ridges longer and thinner than the lateral ones. The cuticular lobes above the cloaca bear no relation to those in *P. bullosa*. Females of *Dipetalonema petteri* n.sp. and microfilariae are described from the same host. This species is similar to primitive *Dipetalonema* species such as *D. weissi* and *D. blanci*. It differs from *Protofilaria furcata*, the only other adult filaria described from Madagascan lemurs, in possessing an unforked tail and a peri-oesophageal ring. M.MCK.

(63f) Biocca & Chabaud describe *Dermatoxys probosciphora* n.sp. from *Xerus rutilus* brought from Somaliland. The three teeth around the mouth are covered by an independent cuticle which runs down the oesophagus as an inner tube as far as, but not including, the terminal bulb. This curious structure is eversible as a proboscis. Although eversion was only

observed in fixed specimens, the perfection of the mechanism suggests that it was more than the result of violent contraction at death and it is probably used in the capture of food. The finding of *D. getula* in *Atlantoxerus getulus* at Agadir, Morocco, is reported. M.MCK.

(63g) Campana-Rouget reports *Parascarophis sphyrnae* n.g., n.sp. from the fish *Sphyrna diplana* near Dakar. It differs from *Ascarophis* mainly in the presence of a cephalic capsule of trichostrongyle type and of two teeth on the internal border of each pseudolabium. *Rhabdochona coelorhynchi* Johnston & Mawson, 1945, described from a single male, is transferred to *Johnstonmawsonia* n.g. as type of a new genus of Thelaziinae and details are given of the female morphology from a single anterior fragment. *Johnstonmawsonia murenophidis* n.sp. in *Murenophis robusta*, described from part of a female, has a relatively shorter protorhabdion than *J. coelorhynchi*, i.e. 200μ in a specimen 12-13 mm. long compared with 320μ in a specimen 5.9 mm. long. The present state of classification of the spirurids of fish, and of the genera *Cystidicola*, *Ascarophis*, *Spinitectus*, *Rhabdochona* and *Metabronema* are discussed. Here the author stresses the importance of giving lateral, dorso-ventral and apical views when describing a species. The presence in *Cystidicola* of teeth around the buccal cavity is considered to be a constant character. This makes *C. stigmatura* a synonym of *C. farionis* which probably has teeth, although they have not been described. M.MCK.

64—Annales de la Société Belge de Médecine Tropicale.

- a. JANSSENS, P. G., 1955.—“Een geval van acute ankylostomiasis.” 35 (1), 109-112. [French summary p. 111.]

65—Annali della Sanità Pubblica.

- a. PELLEGRINI, D. & CILLI, V., 1955.—“L'idatidiosi in Italia.” 16 (1), 81-106. [English, French, German & Spanish summaries pp. 104-106.]

(65a) A survey was made between September and December, 1952 by the Italian High Commission for Hygiene and Public Health to determine the incidence of hydatidosis in man and domestic animals in Italy. It was carried out on 1,525,206 animals and involved the co-operation of the inspection services of the important slaughterhouses in practically all municipal areas. Among the adult animals 9.15% of the cattle, 23.91% of the sheep, 3.5% of the pigs and 9.72% of the goats slaughtered throughout the country were found infected. Less than 1% of young animals was parasitized. The highest incidences were found among adult animals in Sardinia, where 55.09% of the cattle, 68.72% of the sheep and 19.81% of the pigs had the disease. The highest figure for goats was 31.37%, recorded for Tuscany. The number of cases in man averaged 270 per year from 1941 to 1947, and rose to 672 in the years 1948 to 1952. The number of cases reported in Sardinia was nearly a third of the number reported from the rest of Italy. The human incidence was roughly parallel to that in animals. The least affected provinces were Liguria, Piedmont, Lombardy and Veneto. The results of similar surveys in other countries are reviewed and the numbers of dogs found infected by previous authors in different parts of the country are tabulated. M.MCK.

66—Annals of Applied Biology.

- a. PETERS, B. G., 1955.—“Nematology in retrospect and prospect.” 42, 363-371.
 b. JONES, F. G. W., 1955.—“Quantitative methods in nematology.” 42, 372-381.
 c. BOVIEN, P., 1955.—“Host specificity and resistance in plant nematodes.” 42, 382-390.

(66a) Opening a session on “Plant Nematodes” at the Jubilee Meeting of the Association of Applied Biologists, Peters briefly outlined the early history of plant nematology and, in reviewing progress in taxonomic figure drawing and mensuration, paid tribute to Bastian, Bütschli, de Man, Cobb and Goodey as pioneers in the subject. B.G.P.

(66b) Jones reviews progress in the following three aspects of quantitative nematology: (i) estimation of soil populations by methods such as those of Cobb, Seinhorst, and Oostenbrink; (ii) assay of the contents of *Heterodera* cysts using the methods of Morgan, Fenwick, Jones and others; (iii) assay of nematodes within or attached to plants. In a fourth aspect, quantitative morphology, little progress has been made. B.G.P.

(66c) Reviewing the present state of knowledge on host specificity and resistance in plant nematodes, Bovien finds that progress in understanding the nature of biological races has been slight, although sometimes the biological races of a supposed single species have turned out to be distinct species, as with the old compendious *Heterodera schachtii* (sensu latum). Pointing out that such terms as "susceptible" and "resistant" are more relative than absolute, he gives examples drawn from *Heterodera*, *Meloidogyne* and *Ditylenchus*. B.G.P.

67—Annals of Tropical Medicine and Parasitology.

- a. PRIJYANONDA, B., PRADATSUNDARASAR, A. & VIRANUVATTI, V., 1955.—"Pulmonary gnathostomiasis: a case report." 49 (2), 121-122.
- b. WEBBER, W. A. F., 1955.—"The filarial parasites of primates: a review. I. *Dirofilaria* and *Dipetalonema*." 49 (2), 123-141.
- c. CROSSKEY, R. W., 1955.—"Observations on the bionomics of adult *Simulium damnosum* Theobald (Diptera, Simuliidae) in Northern Nigeria." 49 (2), 142-153.
- d. STANDEN, O. D., 1955.—"The treatment of experimental schistosomiasis in mice: sexual maturity and drug response." 49 (2), 183-192.
- e. DUKE, B. O. L., 1955.—"Studies on the biting habits of *Chrysops*. I. The biting-cycle of *Chrysops silacea* at various heights above the ground in the rain-forest at Kumba, British Cameroons." 49 (2), 193-202.
- f. KERSHAW, W. E., LAVOPIERRE, M. M. J. & BEESLEY, W. N., 1955.—"Studies on the intake of microfilariae by their insect vectors, their survival, and their effect on the survival of their vectors. VII. Further observations on the intake of the microfilariae of *Dirofilaria immitis* by *Aedes aegypti* in laboratory conditions: the pattern of the intake of a group of flies." 49 (2), 203-211.
- g. MARKOWSKI, S., 1955.—"A new device for controlling the molluscan vectors of schistosomiasis in the Gezira irrigation system of the Sudan." 49 (2), 212-217.
- h. JAMISON, D. G., KERSHAW, W. E., DUKE, B. O. L. & FEJER, E. A., 1955.—"Studies on the structure of the skin in the normal African and on the changes associated with infection with *Onchocerca volvulus*. I. Preliminary observations based on the findings in the lower leg." 49 (2), 227-233.

(67a) A Thai girl, aged 15, with a dry cough, whitish sputum and a dull aching pain beneath the sternum, coughed up an adult male *Gnathostoma spinigerum*. R.T.L.

(67b) In this review of the six species of *Dirofilaria* and the ten species of *Dipetalonema* which have been recorded from primates, excluding man, Webber gives their salient features and reproduces several text figures of adults and larvae by various authors. She is of opinion that (i) Sandosham correctly regarded *Dirofilaria pongoi* as a synonym of *D. immitis*; (ii) *D. macacae* is *D. repens*; (iii) *Tawila tawila*, apart from the chitinous ring round the mouth, has the characters of *Dirofilaria*. She agrees with Chabaud that there are no grounds for separating *Tetrapetalonema* from *Dipetalonema* and transfers *T. marmosetae*, *T. atelense*, *T. parvum*, *T. nicolleti* and *T. digitatum* to *Dipetalonema*. The status of *D. rodhaini* is considered to be uncertain as the differences between it and *D. streptocerca* are slight. R.T.L.

(67c) Crosskey records his observations on the biting habits, seasonal abundance and other features of the bionomics of adult *Simulium damnosum*, the vector of *Onchocerca volvulus* in Nigeria where endemic foci of onchocerciasis are numerous. R.T.L.

(67d) In a series of experiments with *Schistosoma mansoni* in mice, Standen has endeavoured to reach a more precise evaluation of the relationship between the age of the worms and their susceptibility to drugs; he concludes that tartar emetic and the *p*-aminodiphenoxyalkanes are not active against schistosomes less than 28 days old. Female unisexual infections did not attain sexual maturity and were not susceptible even when 173 days old but proceeded to maturity when the mice were later infected with male cercariae and became

susceptible when the males were 32 to 49 days old. He suggests that in experimental chemotherapy, potential schistosomicides should be tested against infections known to be mature, that in clinical work the possibility should not be overlooked that young and non-susceptible worms may be present with egg-producing worms and that it may be sound practice to give a second course of treatment four weeks after the first to eliminate these. R.T.L.

(67e) In the rain-forest at Kumba, British Cameroons, the biting cycle of *Chrysops silacea* varies considerably above the canopy, in the canopy, in the relatively open layer between the canopy and the sapling layer, and at ground level. The differences may be related to different temperatures, saturation deficiency, light intensity and possibly the availability of resting places. R.T.L.

(67f) A group of *Aedes aegypti*, when fed to repletion on dogs infected with *Dirofilaria immitis*, was found to take in a little more than half as many microfilariae as would be expected from the size of the individual blood meal and the microfilarial concentration in the peripheral blood. As the ingestion of large numbers of microfilariae is lethal, the number of microfilariae taken in by those flies which are potential survivors for long enough to support the development of the microfilariae to the infective stage is no more than about half that taken in by the whole group of flies. R.T.L.

(67g) Markowski describes and figures a device used for trapping molluscs in the irrigation canals of the Gezira. A frame, measuring about 6 feet long by $4\frac{1}{2}$ feet wide and 3 feet in height, is made of one inch diameter iron bars and supported by four legs. This carries a series of rods to which palm leaves are tied. The palm leaves are cut away at the base of the trap to allow the water to flow freely below it. A series of these traps fill the canal from side to side. The molluscs are attracted by and adhere to the palm leaves which are removed monthly, dried in the sun and the molluscs collected. Preliminary tests showed that the traps kept the canals free for a much longer period than treatment with copper sulphate. The traps were cheap and easy to maintain. R.T.L.

(67h) This is a study of the normal structure of the lower part of the leg of the African and a comparison of the changes in the subepidermal and dermal elastic layers due to age with those found in persons infected with *Onchocerca volvulus*. R.T.L.

68—Archives de l'Institut Pasteur de l'Algérie.

- a. SIMITCH, T., BORDJOCHKI, A. & ANGELOVSKI, T., 1955.—“Longévité des embryons dans les oeufs d'*Hymenolepis nana* en dehors de l'hôte.” 33 (1), 30-34.

(68a) The authors have found that the survival time of embryos in the eggs of *Hymenolepis nana*, obtained from experimentally infected *Citellus citellus*, varies with the temperature and humidity of the environment. At 20°C., eggs in compact stools (kept dry) lived for 48 hours, in crumbled stools 24 hours and in water for more than 30 days; at 41°C. to 42°C., eggs in compact stools lived for two hours, in crumbled stools for one hour and in water for six hours. Eggs in compact stools remained viable for ten days at 2°C. and six days at about 0°C. Exposure to sunlight did not appear to have any direct effect. S.W.

69—Archives of Pathology.

- a. BERRY, L. R. & BURROWS, R. B., 1955.—“Appendicitis with cestodes. Report of a case.” 59 (5), 587-593.

70—Archivio Italiano di Scienze Mediche Tropicali e di Parassitologia.

- a. EGIDIO, M. DI, 1955.—“Aspetti radiologici di *Dracunculus medinensis* calcificato.” 36 (1), 5-23. [English, French & German summaries pp. 22-23.]

(70a) Ten cases of calcification of *Dracunculus medinensis* are reported in detail from the Royal Hospital of Taiz in the Yemen. They are illustrated by X-ray photographs. Egidio considers Beit el Faghih (Hodeida) and Haggia as endemic foci in the Yemen. M.MCK.

71—Australian Journal of Agricultural Research.

- a. SOUTHCOTT, W. H., 1955.—“Observations on the removal of *Oesophagostomum columbianum* Curdice from sheep grazing on green oats and on pastures.” 6 (3), 456–465.

(71a) Further field trials have confirmed Gordon's earlier observations [for abstracts see Helm. Abs., 17, No. 11a and 19, No. 9a] that sheep grazed continuously on green oats tended to shed infestations of *Oesophagostomum columbianum*. Grazing on phalaris-subterranean clover or red clover also resulted in the evacuation of some *O. columbianum* but these were much less effective than green oats. Possible factors influencing the removal of worms are discussed, including the level of nutrition and the physical and chemical changes occurring in the intestinal contents. The evacuation of *O. columbianum* by sheep grazing green oats was not complete and was associated with a softening of the faeces and a lowering of their pH.
D.M.

72—Australian Museum Magazine.

- a. POPE, E. C., 1955.—“Bather's itch, or schistosome dermatitis.” 11 (9), 288–291.

(72a) Pope gives a short general account of schistosome dermatitis, particularly with reference to recent outbreaks in New South Wales. The cercaria causing these outbreaks is emitted by *Pyrazus australis*. The article concludes with a list of suggested control measures.
S.W.

73—Australian Veterinary Journal.

- a. ROBERTS, F. H. S. & BREMNER, K. C., 1955.—“The susceptibility of cattle to natural infestations of the nematode *Haemonchus contortus* (Rudolphi 1803) Cobb 1898.” 31 (5), 133–134.

(73a) Further observations are reported on the host specificity of *Haemonchus contortus* and *H. placei*. Due to the presence of several goats on the same pasture, all the calves under observation became infected with *H. contortus*, to which they showed signs of host resistance much earlier than to *H. placei*. The degree of infestation with *H. contortus* was much lighter than with *H. placei* and the host's resistance always resulted in the elimination of the former. The behaviour of *H. contortus* in the host supports the evidence that cattle are highly resistant to the parasite and that in the absence of other hosts it is probable that *H. contortus* would be unable to persist in cattle.
D.M.

74—Belgisch Tijdschrift voor Geneeskunde.

- a. WEYTS, E. J., 1955.—“Onchocerciasis en hare oculaire verwikkelingen.” 11 (3), 105–123.

(74a) [A shorter version of this paper was published in *Ned. Tijdschr. Geneesk.*, 1954, 98, 1467–1468. For abstract see Helm. Abs., 23, No. 465a.]

75—Berliner und Münchener Tierärztliche Wochenschrift.

- a. ENIGK, K. & NICKEL, E. A., 1955.—“Zur Therapie des Spulwurm- und Hakenwurmbefalles bei Hund und Katze.” 68 (11), 190–192. [English summary p. 192.]
b. BÖHM, H., 1955.—“Hyperchrome Anaemie durch Hakenwurmbefall bei einem Hund.” 68 (14), 244–245. [English summary p. 245.]

(75a) Enigk & Nickel report on a series of small scale tests of anthelmintics for dogs and cats. They are unable to confirm reports by earlier workers on the efficacy of Nematolyt: of 25 dogs treated, complete elimination of ascarids was obtained in only two and in 14 there was no effect at all. Against hookworms, it was valueless. Toluol was very successful: 87% to 100% of ascarids and hookworms and 75% of whipworms were removed from dogs and cats. It was very well tolerated. *o*-chlorotoluol was equally effective but costs 27 times as much as toluol. Hexylresorcinol was 100% efficacious against ascarids in five dogs. Piperazine adipate, which was well tolerated, was successful against ascarids in seven dogs and three cats but had no effect on hookworms: pre-treatment fasting was necessary. *N*-butyl chloride

removed 75% of ascarids but was less successful against hookworms and was rather toxic even at low dosages. A.E.F.

(75b) Böhm describes a case of severe hyperchromic anaemia (characterized by an increased blood sedimentation rate, eosinophilia and a high thrombocyte count) in a 15-month-old dog with hookworm infection. After anthelmintic treatment with Terit, blood sedimentation and haemoglobin returned to normal and the general condition of the dog was fully restored. A.E.F.

76—Biochemical Journal.

- a. RATHBONE, L., 1955.—“Carbohydrate metabolism in *Ascaris lumbricoides* from the pig.” [Abstract of paper presented at the Annual General Meeting of the Biochemical Society, London, March 19, 1955.] 60 (1), Proceedings p. xi.

(76a) Rathbone showed that glucose and glycogen breakdown in *Ascaris* muscle followed the Embden-Meyerhof scheme. The succinic oxidase system did not involve a typical cytochrome oxidase and hydrogen peroxide was formed. α -oxoglutarate, L-malate and fumarate increased the Q_{O_2} ; citrate and *cis*-aconitate had no effect. Oxidative phosphorylation occurred in fortified particulate preparations from muscle when perienteric fluid was added. W.P.R.

77—Boletín Chileno de Parasitología.

- a. FAIGUENBAUM, J. & DONCKASTER, R., 1955.—“Consideraciones clínicas y epidemiológicas en relación con dos nuevos casos de difilobotriasis humana.” 10 (1), 15–17. [English summary p. 15.]
 b. NEGhme, A., SILVA, R. & LA VEGA, J. L. DE, 1955.—“*Hymenolepis nana* en Chile. II. Comunicación sobre aspectos epidemiológicos.” 10 (2), 22–23. [English summary p. 22.]
 c. ANON., 1955.—“Nueva organización del Comité Nacional de Hidatidosis.” 10 (2), 36–37.

(77a) Two cases are reported of *Diphyllobothrium latum* in inhabitants of Santiago, Chile, who frequented the southern lake region of the country where the infection is known. After administration of 1 gm. and 0.9 gm. of atebirin respectively, by duodenal sound, each eliminated one complete parasite; one of the tapeworms measured 3.5 m. M.MCK.

(77b) Of 17,219 individuals examined in Chile since 1947, 7.96% have been found infected with *Hymenolepis nana*, mainly in the northern and central regions. The percentage in children seems to be higher, 15.76% having been recorded in an examination of 3,902 aged 7 to 14 years. At an outpatients' clinic for parasitic diseases 412 (20.4%) of 1,299 people attending in 1953 and 1954 were infected. M.MCK.

78—Boletín del Laboratorio de la Clínica “Luis Razetti”. Caracas.

- a. NEGhme, A. & SILVA, R., 1955.—“Algunas observaciones epidemiológicas sobre *Hymenolepis nana* en Chile.” 16 (43/44), 615–620.

(78a) *Hymenolepis nana* was found in 1,986 out of 21,121 individuals examined in Chile since 1949 by a modified Telemann technique. *H. nana* is undoubtedly the most important cestode in the country and was prevalent in the central and northern regions. Rats seemingly play a considerable part in its transmission: infected rats were found at Arica, and at Santiago 10 out of 128 *Rattus norvegicus* captured at the slaughterhouse were infected. M.MCK.

79—British Journal of Pharmacology and Chemotherapy.

- a. MACKIE, A., STEWART, G. M., CUTLER, A. A. & MISRA, A. L., 1955.—“*In vitro* tests of chemical compounds on *Ascaris lumbricoides* and *Fasciola hepatica*.” 10 (1), 7–11.

(79a) The authors' summary states: “1. Derivatives of 2:3-dihydro-3-ketobenzo-1:4-thiazine, phenothiazine and rhodanine, and some miscellaneous compounds, have been

tested *in vitro* against *Fasciola hepatica* and the anterior preparation of *Ascaris lumbricoides*. 2. 2:3-Dihydro-3-ketobenzo-1:4-thiazine derivatives showed only depressant effects, when active, towards *A. lumbricoides*, but paralytic effects were observed with some derivatives, particularly the 6-bromo-compound, on liver fluke. Increase in the length of the side-chain usually decreased the anthelmintic potency towards liver fluke. 3. Some of the amino-acetylphenothiazines were active against liver fluke, and β -10-phenothiazinylpropionic acid was lethal. 4. 5-isoNitroso-3-allylrhodanine was the only rhodanine derivative which paralysed *Ascaris*, but some, especially the benzylidene compounds, were lethal to the liver fluke. 5. Amongst the miscellaneous compounds the following were very active: allyl iodide and sodium azide against *Ascaris*; carbon tetrabromide; benzene hexachloride; allyl iodide and isothiocyanate; mercuric chloride; ethylmercuric chloride; ethoxyethylmercuric chloride; diphenylamine, and *p*-nitrophenol against liver fluke." R.T.L.

80—British Journal of Surgery.

- a. STEPHEN, J. L., 1955.—"Hydatid cyst producing obstructive jaundice." 42 (174), 444-445.

81—British Medical Journal.

- a. STANDEN, O. D., 1955.—"Activity of piperazine, *in vitro*, against *Ascaris lumbricoides*." Year 1955, 2 (4930), 20-22.
 b. SHAMSEDDIN, F., 1955.—"Mepacrine in taeniasis." [Correspondence.] Year 1955, 2 (4931), 140.
 c. HARTLEY, F., 1955.—"Activity of piperazine." [Correspondence.] Year 1955, 2 (4932), 205.
 d. HANNA, M. & SHEHATA, A. H., 1955.—"Treatment of ascariasis in children with piperazine adipate." Year 1955, 2 (4936), 417-418.
 e. STANDEN, O. D., GOODWIN, L. G., ROGERS, E. W. & STEPHENSON, D., 1955.—"Activity of piperazine." [Correspondence.] Year 1955, 2 (4936), 437-438.
 f. McDONAGH, J. E. R., 1955.—"Antimony and schistosomiasis." [Correspondence.] Year 1955, 2 (4938), 562-563.
 g. MESSENT, J. J., 1955.—"Piperazine hydrate in ascariasis." [Correspondence.] Year 1955, 2 (4944), 907-908.

(81a) Standen has found that piperazine citrate, adipate and phosphate are equally effective in inducing narcosis in pig *Ascaris in vitro* in modified Baldwin's solution. The worms were not killed and they recovered in from 30 minutes to two hours when transferred to drug-free medium. In persons with normal daily bowel movement, effective anthelmintic treatment may be achieved by a single large dose in the morning but in constipated patients the bowel movement should be assisted by a purge timed to act while the worms are narcotized, and in these cases it is probable that this would be more certain if the drug were taken before the evening meal. R.T.L.

(81b) Shamseddin has had complete success from the administration of mepacrine in about 100 cases of taeniasis at the Wad Medani Civil Hospital. A total of eight tablets for adults and less for children was given either singly at 15 minute intervals or in one dose on any empty stomach after a light supper; in some cases the treatment was preceded by 32-65 mg. of phenobarbitone as a gastric sedative. In all cases the worms were stained yellow. R.T.L.

(81c) Hartley points out that although the salts piperazine citrate, adipate and phosphate may be equally efficient in inducing narcosis in worms *in vitro*, much of the citrate and phosphate is absorbed before reaching the intestine and neurotoxic effects may result. The sparingly soluble adipate becomes coated in gastric contents with adipic acid and less is absorbed. As the phosphate is readily soluble in hydrochloric acid in the stomach, it behaves like the citrate. R.T.L.

(81d) Piperazine adipate tablets each containing 0.3 gm. were administered at the rate of one to three daily to 85 children with *Ascaris* in Cairo. The treatment, which lasted

from one to seven days and was followed by a mild saline purge, proved safe and effective. The recommended dosage is 0.75 gm. for each year up to six years of age and 4.5 gm. from six years upwards. It should be administered in four equal doses in one day at four-hourly intervals after meals.

M.MCK.

(81e) Experiments are described which show that Hartley's claims that there are peculiarities of solubility and absorption of piperazine adipate [see Helm. Abs., 23, No. 13g] are unfounded. The neurotoxic action of piperazine citrate is uncommon and the side effects are trivial and have only occurred when excessive and prolonged dosage has been given. Such large doses are unlikely to be administered in clinical practice.

R.T.L.

(81f) Commenting on Manson-Bahr's appreciation of J. B. Christopherson in *Brit. Med. J.*, Year 1955, 2 (4934), McDonagh states that in 1917 he had drawn Christopherson's attention to the antimony method of treating schistosomiasis.

M.MCK.

(81g) Although piperazine hydrate elixir can produce dramatic effects in heavy *Ascaris* infestations and is easy to administer, there was a failure rate of 40% with 60 patients who received 22 ml. (6 drachms); two out of six young children who received 14.5 ml. (4 drachms) were still positive for ova after the treatment.

R.T.L.

82—British Veterinary Journal.

- a. WHITE, E. G., 1955.—“The eggs of *Hyostrongylus rubidus* Hall, 1921. A stomach worm of the pig, and their recognition in pig faeces.” 111 (1), 11–15.
- b. KUME, S. & ITAGAKI, S., 1955.—“On the life-cycle of *Dirofilaria immitis* in the dog as the final host.” 111 (1), 16–24.
- c. DUNN, D. R., 1955.—“The culture of earthworms and their infection with *Metastrongylus* species.” 111 (3), 97–101.
- d. SHOHO, C. & TANAKA, T., 1955.—“Further observations on cerebrospinal nematodiasis in animals. II. The problems of reinfection by nematodes and clinically-silent cases.” 111 (3), 102–111.
- e. PARNELL, I. W., DUNN, A. M. & MACKINTOSH, G. M., 1955.—“Observations on some preliminary dosing trials with phenothiazine on hill lambs in southern Scotland.” 111 (5), 195–202. [Statistical appendix by E. C. R. Reeve pp. 202–206.]

(82a) There have been many mistaken references to the size of the eggs of *Hyostrongylus rubidus* originally described in 1892 by Hassall & Stiles. They do not measure $45\mu \times 36\mu$ but about $70\mu \times 35\mu$ and cannot be distinguished in pig faeces from the eggs of *Oesophagostomum dentatum*. The error in size may have led many observers to fail to find the eggs in pig faeces. These two species are, however, easily distinguished in faecal cultures by their sheathed third-stage larvae: *H. rubidus* larvae are more active, longer and thinner than those of *O. dentatum* and when killed tend to lie straight. *H. rubidus* larvae were found in 30 out of 50 faecal samples from 10 out of 14 farms. It is possible that a heavy infection, accompanied by poor nutrition and management, can cause serious illness.

D.M.

(82b) Hitherto the life-cycle of all species of the Filariidae in the final host has remained unknown. The case of *Dirofilaria immitis* was no exception. As attempts to solve the problem by the examination of naturally infected dogs were unsuccessful, experimentally infected dogs were used. In these large numbers of young worms were found in intermediate locations before their final migration to the right ventricle of the heart. These locations were the sub-muscular membrane, subcutaneous tissue, adipose tissue, subserosa and muscles. Three possible migratory routes from the point of entry of the parasite to these locations were examined. The infective larvae do not migrate through the veins or lymphatic system, but penetrate directly through the tissue. Four possible migratory routes from these locations to the heart were examined, namely, via the thorax and lungs, via the buccal cavity, trachea, bronchi and pulmonary artery, via the lymphatic system, and via the veins. The last mentioned route was found to be the one used, migration occurring between 85 and 120 days after infection, the parasites then measuring between 3.2 cm. and 11 cm.

D.M.

(82c) Dunn describes methods of culturing and infecting earthworms with *Metastrongylus apri* and *M. pudendotectus*. The earthworms were reared in a sterilized mixture of equal parts of faeces (cow and goat), loam and leaf mould with an addition of maize meal, and were fed on treacle solution, fodder beet and tea leaves. Adult female lungworms, obtained from bacon factories, were finely chopped in tap-water and the resulting suspension, rich in eggs, was poured over the earthworm cultures. In a few experiments the egg suspension was fed directly to the earthworms with a capillary pipette, or the earthworms were placed in infected pig faeces mixed with an equal quantity of sterile soil. *Eisenia foetida* was the most easily cultured and infected although Dunn did not find this species on pig pastures. *E. foetida* usually harboured first-stage larvae after three or four days, second-stage larvae after nine or ten, and third-stage larvae after eleven or twelve days. *Allolobophora terrestris*, *A. chlorotica*, *A. caliginosa* and *Lumbricus rubellus* were also infected but *L. terrestris* was seemingly refractory. Larvae were found only in the crop, posterior oesophagus, calciferous glands and dorsal blood vessel. These, or portions of worms containing them, were used to infect pigs. M.MCK.

(82d) Shoho & Tanaka discuss the association and confusion of cerebrospinal nematodiasis with other neural infections. They report and illustrate diagrammatically the neural histopathology of four out of 46 sheep killed in Japan. The lesions were definitely attributable to *Setaria* larvae. Although no larvae were actually found there was evidence of both new and old infections, the latter typified by glial and mesenchymal fibres in and around cavities. The authors discuss symptomless cases of cerebrospinal nematode infection and suggest their possible relation with neurotropic virus diseases. Clinically silent cases may be more common among horses in Japan than is normally supposed. M.MCK.

(82e) Trials with phenothiazine were carried out on five farms in southern Scotland to determine the effects of summer dosing on worm egg production and on the weight gains of lambs. The lambs were dosed in late June or early July on three farms and in early August on the other two. After five weeks the changes in worm egg counts and body-weight were compared with the corresponding changes in undosed lambs run with the dosed lambs. The results showed that the output of *Nematodirus* spp. eggs was 37 ($\pm 12.5\%$) lower and of other strongyle eggs 28 ($\pm 9.6\%$) lower than before dosing. There was no tendency to gain weight more rapidly among the dosed lambs. It is suggested that dosing of hill lambs should only be done when clearly necessary or where it has proved beneficial. A statistical analysis of the results is given in some detail. D.M.

83—Bruxelles-Médical.

a. VANBREUSEGHEM, R., 1955.—“Le parasitisme.” 35 (13), 623-635.

(83a) In this lecture inaugurating the course on tropical parasitology at the Université Libre de Bruxelles, Vanbreuseghem discusses the origin and nature of parasitism. R.T.L.

84—Bulletin of Endemic Diseases. Baghdad.

- a. ZAKARIA, H., 1955.—“Further study on the ecology of the intermediate host of *Schistosoma haematobium*, *Bulinus truncatus* Baylis.” 1 (2), 123-155.
- b. HAMAMI, A., 1955.—“Report of the Bilharzia Section.” [Annual Report of the Institute of Endemic Diseases, Baghdad, for the year 1953.] 1 (2), Supplement pp. 20-24. [Also in Arabic.]

(84a) Zakaria has continued his study of the oecology of the Abdul-Latif al-Farras Canal north of Baghdad. This canal is supplied from the Tigris, about 6 km. south-west of Tarmiyah and was dug in 1946. Data are given on its velocity, depth, width, nature of its bed, seasonal changes in temperature of the water, flora and fauna, and especially in relation to the molluscan population. *Bulinus truncatus* has become established in the canal probably as a result of inundation by flood waters bringing the snails from old established canals in the neighbourhood. A close connection was observed between the *Bulinus* populations and the

presence of willows on the banks which provide shade and encourage the growth of *Cladophora*. As *B. truncatus* is very sensitive to desiccation, regular rapid drying of the canals may prove a convenient and efficient method of control. Copper sulphate was effective in reducing the *Bulinus* by 95% and the *Limnaea* by 60% in a heavily infested sector. The snails readily tolerate water temperatures as low as 8°C. and as high as 33°C. but brief exposure to -2°C. or to 50°C. was lethal. R.T.L.

(84b) A detailed report in Arabic of the work of the Bilharzia Section of the Institute of Endemic Diseases, Baghdad, during the summer of 1953, is summarized in English. The incidence of schistosome infections found in surveys, mainly of schoolchildren, in 11 liwas of Iraq is tabulated. The highest was 45% in Kut and Basrah. In Muntafik it was 40%, in Diwaniyeh 26%, in Dyala 24%, in Baghdad 21%, in Amarah 9%, in Hilla 5%, in Kerbelah 4%, in Dulaim and Mosul 2%. Treatment of canals with copper sulphate reduced the incidence of *Bulinus* but eradication was rarely achieved. R.T.L.

85—Bulletin de la Société de Pathologie Exotique.

- a. DESCHIEENS, R. & LAMY, L., 1955.—"Note pratique sur les infestations occultes à *S. mansoni* dans les bilharzioses expérimentales." 48 (1), 38-40.
- b. BIGUET, J., COUTÉLEN, F., DEBLOCK, S., DOBY, J. M. & MULLET, S., 1955.—"Étude de l'activité de la pipérazine dans l'oxyurose." 48 (1), 40-46.
- c. BRUMPT, L. C. & SANG, H. T., 1955.—"Pathogénie dans oedèmes de l'anémie ankylostomique et leur guérison par le traitement vermifuge." 48 (1), 46-50. [Discussion p. 50.]
- d. CAMAIN, R., DESCHIEENS, R. & SÉNÉCAL, J., 1955.—"Documents histo-pathologiques sur un cas de strongyloïdose intestinale humaine." 48 (1), 51-57. [Discussion p. 57.]
- e. ANRAEDT, J. L. & BRYGOO, E. R., 1955.—"Sur un cas de dracunculose scrotale." 48 (1), 57-58.
- f. ROUSSELOT, R., 1955.—"Pathologie des anthropoïdes (3e note). Sur la localisation et l'incidence réelles de *Dipetalonema vanhoofi* Peel et Chardome, 1946." 48 (1), 59-61.

(85a) Deschiens & Lamy exposed three hamsters to *Schistosoma mansoni* cercariae obtained from a single specimen of *Planorbis glabratus*. No eggs were found in the faeces examined from the thirty-sixth day after infection until the end of the experiment, but males were found in the portal or hepatic veins at autopsy 77 days after exposure. The authors stress the importance of careful examination of the mesenteric veins and the liver, as well as faecal examinations, in establishing the presence of *S. mansoni*. M.MCK.

(85b) Piperazine in a flavoured syrup was administered to 38 children with enterobiasis at the high dosage rate of 60 mg. to 80 mg. per kg. body-weight each day for a week. This course was repeated after five days' rest. Four children failed to become cured after the first treatment but all were negative after the second course. Gradually, however, they again showed infection and by the tenth week only 11.7% were still negative. M.MCK.

(85c) When three North Vietnamese suffering from oedema and passing hookworm eggs in the faeces were treated with one or two doses of 3 c.c. to 8 c.c. of tetrachlorethylene (Didakène) they lost 3.5 kg. to 4 kg. in body-weight and expelled up to 1,255 *Ancylostoma duodenale*. M.MCK.

(85d) A two-year-old African child with a *Strongyloides stercoralis* infection died of profuse diarrhoea. Congestion of the lungs, liver, heart, kidney and spleen and thickening of the intestinal walls were observed at autopsy. A larval nematode was found encapsulated in the parenchyma of the lung. Female worms, eggs and larvae were found in the duodenal mucosa on histological examination. M.MCK.

(85f) Three out of four gorillas and 13 out of 21 chimpanzees in the Brazzaville Zoological Gardens were found to be infected with microfilariae. No adults were recovered at the autopsy of three of the infected animals. Hetrazan was administered orally to 11 of the chimpanzees and two of the gorillas at the rate of 6 mg. per kg. body-weight for periods

of ten days, alternating with ten days' rest. Although the animals could not be kept long enough to study the outcome, it seemed probable that the microfilariae would disappear from the peripheral circulation after several treatments. One chimpanzee died of acute lung oedema five days after treatment at the high dosage rate of 11 mg. per kg. for ten days. Adult *Dipetalonema vanhoofti* were found on three occasions in blood vessels of the liver, which Rousselot considers to be the normal habitat although they were originally found in a fibrous nodule near the gall-bladder by Peel & Chardome in 1946. M.MCK.

86—California Medicine.

- a. NEGRI, M. & STIRRETT, R. L., 1955.—“Pulmonary hydatid disease. Report of a case.” 82 (2), 125–126.

87—Canadian Journal of Biochemistry and Physiology.

- a. POLLAK, J. K. & FAIRBAIRN, D., 1955.—“The metabolism of *Ascaris lumbricoides* ovaries. I. Nitrogen distribution.” 33 (3), 297–306.
- b. POLLAK, J. K. & FAIRBAIRN, D., 1955.—“The metabolism of *Ascaris lumbricoides* ovaries. II. Amino acid metabolism.” 33 (3), 307–316.

(87a) Pollak & Fairbairn have analysed the ovaries of *Ascaris lumbricoides*. The α -amino nitrogen for protein and free amino-acids was similar but the two fractions differed considerably in amino-acid composition. Ammonia was present in relatively high concentrations (nearly 3 mg. per cent). Urea was absent. Ribonucleic acid phosphorous was about 41 mg. per cent; desoxyribonucleic acid phosphorus was about 9.8 mg. per cent. The total reducing substance in fresh ovaries was 7.7 mg. per cent of which some 90% was glycogen. W.P.R.

(87b) Pollak & Fairbairn found that homogenates of *Ascaris lumbricoides* ovaries showed active alanine-glutamic and aspartic-glutamic transamination. Several other systems of less activity were present. No amino-acid oxidase was detected and de-amination appeared to be limited to a weak glutamic dehydrogenase. W.P.R.

88—Canadian Journal of Comparative Medicine and Veterinary Science.

- a. EARNSHAW, R. E., 1955.—“Two cases of parasitic thrombosis in the horse.” 19 (6), 194–195.

89—Canadian Journal of Zoology.

- a. ANDERSON, R. C., 1955.—“*Ornithofilaria algonquinensis* n.sp. from *Hirundo erythrogaster* with a revision of the genera *Paramicipsella* Chow, 1939 emend. Chabaud and Choquet, 1953 and *Ornithofilaria* Gönner, 1937.” 33 (3), 107–112.
- b. WOLFGANG, R. W., 1955.—“Studies of the trematode *Stephanostomum baccatum* (Nicoll, 1907). III. Its life cycle.” 33 (3), 113–128.
- c. WOLFGANG, R. W., 1955.—“Studies of the trematode *Stephanostomum baccatum* (Nicoll, 1907). IV. The variation of the adult morphology and the taxonomy of the genus.” 33 (3), 129–142.
- d. EDWARDS, D. K. & JANSCH, M. E., 1955.—“Two new species of dermatitis producing schistosome cercariae from Cultus Lake, British Columbia.” 33 (3), 182–194.
- e. MULVEY, R. H., 1955.—“Oogenesis in several free-living and plant-parasitic nematodes.” 33 (4), 295–310.

(89a) Anderson reports *Ornithofilaria algonquinensis* n.sp. from *Hirundo erythrogaster* in Ontario. He presents a revised scheme for the separation of *Paramicipsella* and *Ornithofilaria* to replace that proposed by Chabaud & Choquet in 1953 [for abstract see Helm. Abs., 22, No. 74b]. According to this revision *Paramicipsella* has equal and similar spicules and usually a cephalic shield. *Ornithofilaria* lacks the shield and has subequal spicules. A key is given to the seven species proposed for *Ornithofilaria*, namely, *O. stantschinskyi* n.comb., *O. mavis*, *O. fallisensis*, *O. lienalis* n.comb., *O. brevispiculum* n.comb., *O. algonquinensis* and *O. travassosi* n.comb. *O. algonquinensis* is apparently most similar to *O. travassosi*, from which it differs in having two or three pairs of pre-anal papillae instead of one pair. M.MCK.

(89b) In the third paper on *Stephanostomum baccatum*, Wolfgang gives an account of the life-cycle and describes the adult, redia and cercaria with their known hosts and geographical distribution. The cercaria is xiphidiocercous, has secondarily lost the penetration stylet and has two eyes. It is most similar to *Cercaria neptunae*. Development occurs in the gonad and digestive glands of *Buccinum undatum* and *Neptunea decemcostatum*; the larva burrows into pleuronectid fishes when accidental contact is made and settles in the skin or somatic muscles. The adult is found in the rectum of *Hemirhamphus americanus*. There are two types of eggs, ribbed which are seemingly infertile, and smooth-shelled which are embryonated. On examining trematodes from Canadian hosts identified by Stafford in 1904 as *S. sobrinum* (which specimens Caballero queried in 1952 and considered to be *S. tenue*) Wolfgang concludes that they are *S. baccatum*. In view of the hosts and distribution of *S. sobrinum* and its essential agreement with Levinsen's original (but vague) description, Wolfgang suggests that it is synonymous with *S. baccatum*. He considers *S. hystrix* (Dujardin, 1845) Looss, 1899, for which the metacercaria was described, as also conspecific. The cysts of *S. baccatum* reported by Nicoll & Small in 1909 in the viscera of *Lophius piscatorius* in the North Sea probably do not belong to this species. M.MCK.

(89c) In the fourth paper on *Stephanostomum baccatum*, Wolfgang discusses and tabulates the variations in morphology and measurements of 100 specimens from an infection of about 400 flukes in a sea raven. From an examination of well and poorly spined specimens of *S. baccatum* from sea ravens in the same area he concludes that spination is of no value in identification. He discusses the related genera and tabulates with their main characters the 29 *Stephanostomum* species considered valid by Caballero in 1952. The most useful points for specific diagnosis in this genus are the length of the genital atrium, the structure of the cirrus, cirrus pouch, metraterm and Mehlis' gland (whether compact or diffuse), the size of the pharynx, the sucker ratio and the presence or absence of a uroproct. *S. triglae* is probably conspecific with *S. baccatum*, and *Dihemistephanus* and *Tormopsolus* are probably synonymous with *Stephanostomum*. Until more species are thoroughly examined no attempt to construct keys can be successful. M.MCK.

(89d) Two new species of dermatitis-producing cercariae are reported from *Physa* c.f. *coniformis* at Cultus Lake, British Columbia. *Cercaria columbiensis* n.sp. is an apharyngeate distome cercaria of the *spindalis* group and closely resembles that of *Gigantobilharzia huronensis*. Although the new species lacks the presumed neural structure immediately anterior to the ventral sucker, further study may show the two to be synonymous. A duckling was successfully infected with the other new cercaria and the immature female recovered was named *Trichobilharzia adamsi* n.sp. The adult resembles most closely *T. physellae* but is considerably wider especially in the region of the ventral sucker. The cercaria belongs to the *ocellata* group of Sewell; it is similar to *Cercaria oregonensis* and the cercariae of *T. cameroni* and *T. szidati*, but it differs from them mainly in measurements. M.MCK.

(89e) Mulvey describes oogenesis in *Meloidogyne hapla* from lettuce roots, in *M. incognita* from potato tubers, potato roots and multiflora rose roots, in *Heterodera* sp. from hairy vetch roots and in *Diplogaster* sp. from decaying narcissus bulbs. In *Diplogaster* a polar cell was observed in the secondary oocyte but no polar bodies were seen in the parasitic species. In the *M. hapla* studies sperm nuclei were present in many of the eggs showing maturation divisions and in these eggs the haploid chromosome number appeared to be ten; in those eggs without sperm nuclei the number appeared to be six. The haploid number for *M. incognita* from all three sources was eight and for *Diplogaster* was six. In the *Heterodera* no males were found in all the material examined and the telophase of the primary oocyte is the extent of the maturation division; consequently it could not be determined whether it was the haploid or diploid number of chromosomes present although there were at least 16 chromosomes in each daughter group of the first maturation division. S.W.

90—Canadian Medical Association Journal.

- a. FORTIER, J. J., 1955.—"ACTH and cortisone in trichinosis. Report of three cases." 72 (4), 298-301.
- b. WONG, M. H., 1955.—"Multiple infestation with *Dipylidium caninum* in an infant." 72 (6), 453-455.

(90a) In three cases of trichinosis, treatment with cortisone or ACTH or both resulted in dramatic alleviation of all the symptoms including the oedema. In one of the cases the onset of muscular pains was entirely suppressed. R.T.L.

(90b) A 13-month-old girl passing proglottides of *Dipylidium caninum*, but otherwise healthy, was given in the evening a saline purge with one drachm of magnesium sulphate. This was followed the next morning by two doses of 0.2 gm. of male fern extract given by stomach tube at an interval of one hour. Three further doses of magnesium sulphate and an enema were given during the next few hours. No food except clear fluids was given during the treatment. Nine *Dipylidium* were recovered and no toxic effects were observed. A few proglottides continued to be passed and the treatment was repeated after 14 days. A few short chains were recovered and thereafter no more segments were passed. M.MCK.

91—Ceylon Veterinary Journal.

- a. SENEVIRATNA, P., 1955.—"A check list of helminths in the Department of Veterinary Pathology, University of Ceylon, Peradeniya." 3 (1), 32-37.
- b. RAMANUJACHARI, G. & ALWAR, V. S., 1955.—"Notes of parasitological interest." 3 (1), 38-40.

(91b) Ramanujachari & Alwar have found and briefly redescribed *Trichuris cynocephalus* in *Macaca radiata* from Erode and Pondicherry. This is the first record of this species in an Indian monkey. M.MCK.

92—Comptes Rendus des Séances de la Société de Biologie. Paris.

- a. NIGON, V. & BOVET, P., 1955.—"La teneur des gamètes en acide désoxyribonucléique chez *Parascaris equorum* Goeze." 149 (1/2), 129-130.
- b. BUTTNER, A., 1955.—"Les distomes progénétiques sont-ils des pré-adultes ou des adultes véritables? Valeur évolutive de la progénèse chez les Digenea." 149 (3/4), 267-272.
- c. LE GALLIC, P., 1955.—"Influence du parasitisme sur les fonctions liées à la vitamine A, chez le rat et la souris." 149 (3/4), 349-351.
- d. GOVAERT, J., 1955.—"Etude quantitative de l'acide désoxypentosenucléique lors de la maturation et de la fécondation de l'oeuf chez *Fasciola hepatica*." 149 (9/10), 1066-1069.

(92a) Nigon & Bovet have investigated the desoxyribonucleic acid content of fertilized unsegmented ova and spermatids of *Parascaris equorum* var. *univalens*. The ova contained about 120 times as much desoxyribonucleic acid as did the spermatids and, even allowing for the presence of two pronuclei and polar bodies, the content of the egg is probably $12.5 \times 10^{-6}\gamma$ compared with $2.5 \times 10^{-6}\gamma$ in the spermatid. This indicates that some of the substance is located in the cytoplasm; further investigation will show if the cytoplasmic desoxyribonucleic acid is identical with or comparable to that of the nucleus. S.W.

(92b) In this review of progenesis in digenetic trematodes, Buttner describes and gives examples of four types or degrees. In the first which is found in several azygid cercariae and in the metacercariae of *Pleurogenes medians* and *Coitocaecum* sp., the progenetic forms show the beginning of genital activity and produce a few immature eggs. In the second type, the progenetic forms differ from the adults only in size and in having a lower fecundity, insufficient miracidia being produced to ensure the continuation of the species; this is rare but has been observed in *Cercaria sagittaria*. In the third type the progenetic forms show atrophy of the testes, a functional ovary and abundant parthenogenetic eggs; this is the case in *Coitocaecum anaspidis* where the encysted metacercariae produce innumerable eggs and the miracidia which hatch can establish themselves in the blood sinuses of *Anaspides*; if the infected *Anaspides* are ingested by the fish final host, adults of *C. anaspidis* will develop

in which the testes are functional but few eggs are produced. In *Ratzia joyeuxi*, a second example of this type, there appear to be two biological races, one capable of development to the adult in the final host, the other capable only of the progenetic shortened cycle. In the fourth type the development of the gonads, the genital activity and the fecundity rivals that of the true adult and in *Paralepoderma brumpti* the cycle with three hosts has been lost altogether, only the progenetic form existing, although in the closely related *P. cloacicola* the three-host-cycle with true adults does exist. S.W.

(92c) Le Gallic has shown that cestode infection in rats and mice inhibits the synthesis of vitamin A-hormone. S.W.

(92d) At metaphase of the first maturation division in *Fasciola hepatica* the primary oocyte contains twice the theoretical diploid amount of desoxypentosenucleic acid. The first polar body and the secondary oocyte contain the diploid amount and the second polar body and, initially, the male and female pronuclei the haploid amount. On the other hand in some sections, eggs contained pronuclei with the diploid amount of desoxypentosenucleic acid. There appears to be a slow but simultaneous synthesis of desoxypentosenucleic acid in the two pronuclei in order to build up the amount necessary for the nuclei of the first two blastomeres. No trace of segmentation was observed in the flukes examined. S.W.

93—Cornell Veterinarian.

- a. KENNEDY, P. C., 1955.—“Experimental bovine trichinosis: an attempt to produce eosinophilic myositis of cattle.” 45 (2), 127-152.

(93a) To determine whether eosinophilic myositis can be caused in cattle by *Trichinella spiralis*, two yearling bulls and a month-old calf were given respectively about 27,000 larvae, 8,000 followed 38 days later by 20,000 and 250,000. The course of the infection was studied by a series of muscle biopsies and by examination post mortem. Forty days after infection the first bull was killed and showed typical myositis in the striated muscles, particularly the diaphragm, masseter and rectus abdominis, all of which contained larvae. Although eosinophilic myositis in cattle has often been attributed to sarcosporidia, none was observed. In the second bull no encysted larvae or symptoms appeared but a mild myositis developed which did not increase after the second infective dose. Sarcosporidia were occasionally present. The month-old calf became seriously ill and after the 23rd day was showing over 10,000 larvae per gm. in the masseter. The severity of the lesions seemed to be proportional to the number of larvae present. Sarcosporidia were not seen. In all three animals larval invasion ceased within about 25 days and muscle samples fed to rats up to 42 days were infective. Five naturally occurring cases of myositis in cattle are described; in these encysted sarcosporidia but no *Trichinella* larvae were present. The induced lesions were often identical with natural ones but were discrete and ceased to develop after about 30 days. Natural lesions were always diffuse and presented a range of stages. *Trichinella* can therefore produce myositis in cattle. The development of the disease in the second exposed bull suggests that myositis in the absence of encysting larvae may nevertheless be associated with the parasite. M.MCK.

94—Current Science. Bangalore.

- a. SINGH, K. S., 1955.—“A new method for the study of cercariae.” [Correspondence.] 24 (1), 21.
- b. VARMA, A. K., 1955.—“Gnathostomiasis in a dog.” [Correspondence.] 24 (2), 57.

(94a) The presence of brown pigment and cystogenous cells renders the study of paramphistome cercariae difficult. But when the living cercariae are placed in a drop of aceto-carmin and manipulated with steel needles, to add iron, for about two minutes, the cercariae are killed in a relaxed condition with the pigment dissolved and the various internal organs fixed and stained. Unfortunately the stained preparations are not permanent. R.T.L.

(94b) The faeces of a dog from Nepal was found, in Calcutta, to contain operculate eggs characteristic of those of *Gnathostoma spinigerum*. Camera lucida drawings are given of the development of the ovum for seven days within the shell and of the hatched embryo. R.T.L.

95—Deutsche Medizinische Wochenschrift.

- a. HAASE, K. E., 1955.—“Vergiftungen durch phenothiazinhaltige Wurmschokolade.” 80 (8), 280–283.
- b. GOETERS, W., 1955.—“Zur Behandlung der Oxyuriasis im Kindesalter. Erfahrungen mit Uvilon.” 80 (9), 312–313.

(95a) Haase reports ten cases (five of them severe) of toxic symptoms with haemolytic anaemia in children (aged between one year eight months and five years three months) after administration of “Helmetina worm chocolate”, which contains phenothiazine. This preparation is apparently readily obtainable at chemists’ and druggists’ shops and the fact that its palatable presentation easily leads to overdosing makes it particularly dangerous. In any case, Haase concludes, phenothiazine is too dangerous a drug to use in the treatment of enterobiasis which is not usually a serious infection. A.E.F.

(95b) Goeters reports on a trial of the piperazine preparation Uvilon in the treatment of enterobiasis. A total of 42 children (aged from 2 to 14 years) were given a daily dose of from one to three teaspoonfuls over a seven-day period. No special diet was necessary and there were no side effects. Up to the 45th day after treatment, 37 of the children (88%) were negative for ova. Two children who remained positive when given Uvilon in tablet form were completely cured by the liquid preparation. This result confirms reports on the efficacy and safety of piperazine as an anthelmintic. A.E.F.

96—Deutsche Tierärztliche Wochenschrift.

- a. RASCHKE, E., 1955.—“Neues in der Trichinenschau.” 62 (23/24), 236–239.
- b. HOHNER, L., 1955.—“Die tierischen Ento- und Ektoparasiten des Sumpfbibers und ihre Bekämpfung.” 62 (33/34), 337–342.

(96a) The current meat inspection regulations in Germany are impracticable and uneconomical for the inspection of imported sausages and parts of carcasses for *Trichinella*. The expediency of replacing inspection by freezing is discussed. Results obtained by different authors on the effect of freezing pork infected with *Trichinella* are quoted: a graph sets out the viability of *Trichinella* at various temperatures and periods of freezing observed by Raschke, and those which Strobl proposed in 1954 as a basis for a new meat freezing regulation. G.I.P.

(96b) In this review of the parasites recorded from nutria in Germany, Hohner includes the following helminths: *Stichorchis waltheri*, *Dicrocoelium dendriticum*, *Fasciola hepatica*, *Notocotylus* sp., *Anoplocephala* sp., *Hymenolepis octocoronata*, *Cysticercus talpae*, *C. taeniaeformis*, *Cysticercus* sp., *Coenurus serialis*, *Echinococcus polymorphus*, *Subulura linstowi*, *Strongyloides myopotami*, *Filaria kitti*, *Trichostrongylus retortaeformis*, *Heligmosomoides sprehni*, *Trichuris myocastoris*, *Capillaria hepatica* and *Trichinella spiralis*. R.T.L.

97—Diseases of the Chest. Chicago.

- a. YANG, S. P., CHENG, C. S. & GHEN, K. M., 1955.—“Chest X-ray findings and some clinical aspects in pulmonary paragonimiasis.” 27 (1), 88–95. [French & Spanish summaries pp. 94–95.]

98—Documenta de Medicina Geographica et Tropica. Amsterdam.

- a. BEUKERING, J. A. VAN, 1955.—“Symptoms in *haematobium* schistosomiasis.” 7 (1), 10–15.

(98a) Beukering pointed out that in view of his experiences with schistosomiasis haematobia in the Gold Coast he could not concur with the view that the disease is one of the

less serious tropical diseases. The possibility that the distribution of *Schistosoma haematobium* may have been extended beyond Africa and the Middle East by the influx of African soldiers into eastern Asia during World War II merits serious consideration. The subjective and objective symptoms of 270 women, 147 men and 31 children, all of whom had *S. haematobium* eggs in the urine, are tabulated and discussed. Some of the cases responded to treatment with anthiomaline (sometimes administered with stibophen) but in cases of chronic schistosomiasis treatment succeeded only in bringing the condition to a halt. In some instances, especially where treatment effected little response, the possibility existed that the symptoms might be caused by other affections. Beukering concludes that there can be no question of a firmly outlined clinical picture of schistosomiasis, since the symptoms depend in the first place on the site occupied in the body by the parasite or the eggs or both. D.L.H.R.

99—East African Agricultural Journal.

- a. GINSBERG, A., 1955.—“*Cysticercus bovis* (beef measles) in Kenya.” 20 (4), 216–219.

(99a) During a twelve-month period, cysticerci were found in 23% of all cattle admitted to the abattoir of the Kenya Meat Commission at Athi River. 38% of all European producers delivered infected cattle; over 50% of the adult stock and over 60% of the calves of some producers were infected. Every carcass revealing less than 20 *Cysticercus bovis* during routine meat inspection is subjected to sterilization by freezing for not less than 14 days. Those containing less than seven cysts are then released after a further examination and those with from seven to 20 cysts are available only for manufacturing purposes or to large employers of African labour as contract meat. In the other African areas routine inspection of beef carcasses cannot yet be introduced on a scale likely to reduce the overall incidence of cysticerciasis. R.T.L.

100—East African Medical Journal.

- a. WILLIAMS, G. A., 1955.—“Four years' record of Bilharzia cases at Morogoro.” 32 (5), 179–185.

(100a) Between 1925 and 1928, Williams treated 112 cases of schistosome infection while at Morogoro in East Africa. Of these, 51 came from Morogoro and 61 from outside. Eggs of *Schistosoma mansoni* were found in the urine in two instances and free-swimming miracidia of *S. haematobium* in the newly voided urine of 10 cases. Uniform success followed the intravenous injection of mercurochrome; doses of 3 grains in 10 c.c. of distilled water were given once a week. R.T.L.

101—Experimental Parasitology. New York.

- a. LELAND, Jr., S. E., LINDQUIST, W. D. & LILLEVIK, H. A., 1955.—“An electrophoretic and chemical fractionation study of sera from rats immunized against the nematode *Nippostrongylus muris*.” 4 (3), 208–225.
- b. WEINSTEIN, P. P. & HASKINS, W. T., 1955.—“Chemical evidence of an excretory function for the so-called excretory system of the filariform larva of *Nippostrongylus muris*.” 4 (3), 226–243.
- c. NEWTON, W. L. & VON BRAND, T., 1955.—“Comparative physiological studies on two geographical strains of *Australorbis glabratus*.” 4 (3), 244–255.
- d. DEWITT, W. B., 1955.—“Influence of temperature on penetration of snail hosts by *Schistosoma mansoni* miracidia.” 4 (3), 271–276.
- e. DROPKIN, V. H., 1955.—“The relations between nematodes and plants.” 4 (3), 282–322.

(101a) Leland *et al.* infected rats with increasing numbers of *Nippostrongylus muris* at fortnightly intervals. The changes in serum which were examined by electrophoresis and salt fractionation were as follows: (i) as the number of larvae injected increased above 1,000 the total protein increased; (ii) β -globulin and total globulin increased as the number of larvae injected increased and diminished when the number injected decreased; (iii) as a rule the β -globulin was higher in the second week after injections; (iv) γ -globulin showed no

changes. The lung weight, when converted to percentage of total body-weight, was found to increase in the infected animals and these increases were paralleled by serum changes. The authors therefore interpreted the serum changes largely as the result of trauma in the lungs.

W.P.R.

(101b) Weinstein & Haskins have examined by several methods the excretory products produced by filariform larvae of *Nippostrongylus muris* incubated in water containing antibiotics to limit bacterial growth. The following substances were identified: ethylene diamine, cadaverine, ethanolamine, methyl amine, propyl amine, butyl amine, 1-2, dicarboxylic acids and ammonium salts.

W.P.R.

(101d) In a study of the effect of environmental temperature on the ability of Puerto Rican *Schistosoma mansoni* miracidia to develop in five geographical strains of *Australorbis glabratus*, it was found that at 10°C. the miracidia were almost motionless and no infection resulted. Motility increased with the temperature to 40°C. which exceeded the normal heat tolerance of *A. glabratus*. The strikingly different results obtained with a laboratory colony of *A. glabratus* imported from Venezuela in 1946 and one imported from the same region in 1952 indicate that colonies maintained in an artificial environment may give rise to progeny with characteristics different from those of the original wild stock and may affect the interpretation of experimental data.

R.T.L.

(101e) In this review of the relations between nematodes and plants, Dropkin points out that their role as pathogens is not always clear as many of the diseases in which they are involved probably result from the interaction of bacteria and fungi as well as nematodes. The literature bearing on the evidence that nematodes damage plants is summarized. The types of pathological changes induced by nematodes are classified under (i) cell hypertrophy, (ii) cell hyperplasia, (iii) cell necrosis, (iv) dissolution of parts of cell walls, (v) alterations in the differentiation of tissues. Sections are devoted to the subject of plant resistance and its genetic basis. The effect of various environmental factors and the results of efforts to control or eliminate the nematodes in the soil are examined. The finding of nematocides which are not phytotoxic appears to be the chief problem to-day.

R.T.L.

102—Farming in South Africa.

- a. DU PLESSIS, S. J., 1955.—“Requirements for the importation of potatoes and seed potatoes.” 30 (350), 239-242.

(102a) Attention is drawn to the regulations governing the importation of table and seed potatoes into the South African Union. The restrictions imposed by Proclamation No. 286 of 1936 (now quoted in so far as they deal with eelworm) require that each consignment of potatoes to be introduced into the Union should be accompanied by a sworn statement by the consignor in which the country of origin is stated as well as the particular locality where the particular consignment of potatoes has been produced. Paragraph 5 of the Annexure prohibits the introduction of potatoes from any country beyond the boundaries of the Union except the Rhodesias, Nyasaland and the Belgian Congo unless a certificate from a recognized institution in the country of origin is delivered in which it is certified that the potatoes were grown in soil tested not more than one year before the time of dispatch of the potatoes and found to be free from *Heterodera schachtii*, *H. rostochiensis*, *H. punctata* and *H. major*. Such a certificate will not be required “(a) if the Government of the country of origin has certified to the Union Minister that the said nematodes are unknown to exist in the country and that the Government undertakes to inform the Minister of any outbreak and if information recording an outbreak has not been received by the Minister; or (b) if the consignee of the potatoes produces from the Department of Agriculture or other aforesaid official institution of the declared country of origin, a certificate dated within nine months of the day of arrival of the potatoes concerned, to the effect that the said nematodes, have not been known to exist, so far as it is aware, in the area in which the potatoes have been grown,

and if so required the consignee shall supply an attested copy of such certificate herein provided for; or (c) if in cases in which special arrangements have been made, a certificate is produced from the Department of Agriculture or other aforesaid official institution of the declared country of origin, to the effect that on official inspection by a duly qualified official the potatoes concerned and soil adhering to them were found to be apparently free from the said nematodes; (d) if it is specially indicated on the inspection or phytosanitary certificates, issued by an official institution in the country of origin and accompanying the consignment, that the potato tubers originate from potato fields not infected with *Heterodera schachtii* and *Heterodera rostochiensis* and if the potatoes offered for introduction into the Union are free from soil". All potatoes arriving at the Union ports are liable to be examined by officers of the Department of Agriculture. Potato tubers must be free from any sign of infection by *Heterodera* spp. and *Meloidogyne* spp. and free from soil and, unless specially exempted, the consignment must be accompanied by "a certificate or additional declaration on a recognised health certificate issued by the Department of Agriculture of the country of origin, in which it is declared that the potatoes were grown in soil tested not more than one year before the time of despatch of the said potatoes and found to be free from the cyst-forming nematodes, known as *Heterodera schachtii*, *Heterodera rostochiensis*, *Heterodera punctata* and *Heterodera Major*".

R.T.L.

103—Florists' Exchange. New York.

- a. JENSEN, H. J., CAVENESS, F. E. & McWHORTER, F. P., 1955.—"Root lesion nematodes cause heavy lily damage." 124 (15), 10.

(103a) Root lesion nematodes can be disseminated in the old roots of Easter Lily bulbs packed in peat. They can survive cold storage at 35°F. for two months but the infected plants grow normally and bloom normally as the root system grows far faster than the reproductive potential of the eelworms. Several [unspecified] chemical, thermal and vacuum methods of disinfestation were tested but none can yet be safely recommended.

R.T.L.

104—Fruitteelt.

- a. MEIJNEKE, C. A. R. & OOSTENBRINK, M., 1955.—"Bodemmoetheid in boomkwekerij en fruitteelt." 45 (7), 172-173.

(104a) Meijneke & Oostenbrink give a popular account of "soil tiredness" which occurs frequently in the Netherlands when trees, including fruit trees, of the same or closely related species are grown repeatedly on the same land. This leads to stunted growth. Recent research has shown that in very many cases "soil tiredness" is due to nematodes of the genus *Pratylenchus* (and to a lesser degree *Paratylenchus* and *Hoplolaimus*) which live in or on plant roots. The most promising control measure seems to be the application of D-D mixture to the soil.

A.E.F.

105—Gunma Journal of Medical Sciences.

- a. MATSUMURA, T., YUGAMI, S., HOSOYA, T., SUZUKI, T., UCHIDA, K. & TADOKORO, H., 1955.—"Studies on *Ascaris* allergy." [Abstract of paper presented at meeting of the Kitakanto Medical Society, October 10, 1954.] 4 (2), 170-171.

(105a) The authors have shown that the toxic reactions which have been reported previously as being caused by *Ascaris* extracts are in fact allergic reactions. *Ascaris* body-fluid injected intravenously into uninfected guinea-pigs did not kill them, even at the high dose rate of 10 c.c. per kg. body-weight, but guinea-pigs which had been infected with *Ascaris* larvae were killed by a dose of 0.1 c.c. per kg. Contraction of the intestine, changes in the mucous membranes of the stomach and duodenum and a positive skin reaction are also reported to have occurred in infected but not in uninfected guinea-pigs.

S.W.

106—Harefuah.

- a. SADEH, J., 1955.—[Toxic encephalitis with positive electro-encephalogram due to oil of chenopodium.] 48 (2), 29–30. [In Hebrew: English & French summaries p. 30.]

(106a) Transient blindness, headaches and convulsions followed the administration of chenopodium oil to a young girl heavily infected with *Ancylostoma duodenale*. R.T.L.

107—Higiiena i Sanitariya. Moscow.

- a. VASILKOVA, Z. G. & NABOKOV, V. A., 1955.—[Rendering soil free from the eggs of the Ascaroidea.] Year 1955, No. 2, pp. 16–20. [In Russian.]

(107a) Various means of freeing soils from helminths were tested under laboratory and natural conditions. Temperatures produced by a blow-lamp flame or by boiling water were insufficient. Steam acting on the soil for ten minutes gave a temperature of 80°C. to a depth of 10 cm. and killed all *Ascaris* eggs but this is not practicable in general use. Of the 16 chemicals tested, a total destruction of the eggs was obtained with 10% creolin, 3% to 5% alkaline phenol-sulphonic phenol compound and 13% xylene. Where the infective *Ascaris* larvae develop in spring, soil should be treated after the snow melts and again in late June; in localities with a high temperature a third treatment is necessary in August. G.I.P.

108—Igaku Kenkyu. Kyushu University.

- a. MORITA, T., 1955.—[A study on the third stage larva of *Gnathostoma spinigerum*. I. Morphological features.] 25 (3), 411–431. [In Japanese: English summary pp. 429–431.]
b. MORITA, T., 1955.—[A study on the third stage larva of *Gnathostoma spinigerum*. II. Effect of emulsion of larval body, particularly the esophageal gland on the skin of the host.] 25 (3), 432–446. [In Japanese: English summary pp. 443–444.]

(108a) Morita gives a detailed description of the morphology of the third-stage larva of *Gnathostoma spinigerum*. Each of the two lips have two labial papillae with an amphid between them. There are four transverse rows of hooklets on the head bulb which contains four globular sacs, each connected with a cervical sac. Four unicellular cephalic glands surround the oesophagus at the base of the head bulb and open where the lips border the head bulb. They are suspended in the pseudocoel. The cuticle of the body wall is transversely striated and bears rows of minute spines throughout the body length. The muscle layer of the body wall is polymyarian and coelomyarian in arrangement and type. The oesophagus has a muscular portion and a glandular portion containing a dorsal and two subventral glands which open in the oesophageal lumen. The excretory system is an inverted U-type. The genital system is not fully developed. The vulva opens at the junction of the middle and posterior thirds of the body. The pair of genital spicules are visible. The coelomic fluid is blood red in third-stage larvae taken from *Ophicephalus argus* and more deeply coloured in warm blooded animals, i.e. rats and mice. That the colour is due to oxyhaemoglobin was demonstrated spectroscopically. Haemochromogen crystals were obtained from the coelomic fluid by Takayama's method. R.T.L.

(108b) Injection into the skin of animals of an emulsion of the oesophagus of *Gnathostoma spinigerum* caused local congestion and cell infiltration in from 15 minutes to 4 hours, circulatory disturbances, tissue degeneration, necrosis and especially tissue eosinophilia in from 8 to 24 hours and increased proliferation of fibroblasts in 48 hours. Clinically the injection of the emulsion was followed in 6 to 24 hours by a marked inflammatory skin swelling, histologically similar to the lesion in human gnathostomiasis. With emulsified cuticle and intestine, the reactions were milder and less extensive. From his experiments, Morita concludes that the local inflammation in human gnathostomiasis is partly due to the presence of the third-stage larva of *G. spinigerum* as a foreign body but mainly to the secretions from the oesophageal glands. R.T.L.

109—Indian Journal of Medical Sciences.

- a. VORA, D. D., 1955.—“Treatment of ascariasis with intra-gastric oxygen. An analytical report.” 9 (2), 47–51.

(109a) The administration of intragastric oxygen recommended by Kravetz and reported by Talyzin [for abstract see Helm. Abs., 23, No. 442a] as a treatment for ascariasis has been used by Vora in 31 patients of whom 20 passed roundworms. As the treatment is non-toxic, 38 times cheaper than santonin and about 700 times cheaper than diethylcarbamazine, Vora considers it suitable for mass treatment in a country like India. R.T.L.

110—Indian Journal of Veterinary Science and Animal Husbandry.

- a. RATHORE, G. S., MATHUR, P. D. & SANKARNARAYAN, N. S., 1955.—“Haemonchosis in sheep in Rajasthan and its control.” 25 (1), 1–15.
 b. SINGH, A., KOHLI, J. D. & PARIHAR, D. B., 1955.—“Search for anthelmintics among indigenous remedies. I. Action of acetyl saponin from *Anagallis arvensis* Linn. on annelids and helminths.” 25 (1), 25–29.
 c. ANANTARAMAN, M., 1955.—“Biological control of aquatic snails. (A preliminary account.)” 25 (1), 65–67.

(110a) In Rajasthan helminthiasis is one of the primary causes of losses in sheep and goats. The authors have carried out a survey of the nematodes in sheep and goats throughout the province and the results are mapped and tabulated. The only area found free from infection was around Bap where the sheep were of good size and healthy. Around Udaipur the sheep were in poor condition and showed faecal egg counts of up to 4,000 e.p.g. *Haemonchus contortus* and *Oesophagostomum columbianum* were the most prevalent and the most important. Field trials with phenothiazine showed it to be very effective. S.W.

(110b) Singh *et al.* have tested an acetyl saponin prepared from *Anagallis arvensis* on annelids (*Pheretima posthuma* and *Hirudinaria granulosa*), on *Texocara mystax* and on *Moniezia* spp., all *in vitro*. The chemical had very little effect on *T. mystax* but killed the annelids and *Moniezia* spp. The effects were compared with those of other anthelmintics and appeared to be similar to those caused by male fern extract. The paper is illustrated by tables and by kymographs, and the preparation of the saponin is described. S.W.

(110c) Anantaraman discusses methods of controlling *Limnaea* and *Indoplanorbis* in India where they are the intermediaries for *Fasciola*, schistosomes and paramphistomes. He suggests the removal of aquatic plants such as *Ceratophyllum*, *Potamogeton* and *Pistia* associated with these snails. Agroxone, a preparation which contains a plant hormone, was successful in destroying these plants. Natural enemies could be fostered: larvae of the firefly *Lamprophorus tenebrosus* consumed in the laboratory at least one snail per day; of the fish observed, *Osphromenus gourami* ate vegetation, young snails and egg cocoons in quantities. Keeping of ducks is suggested and the planting of trees with poisonous fruits (e.g. *Balanites aegyptiaca*, *Sapindus emarginatus*, *Acacia concinna* and *Caesalpinia coriaria*) at pond and ditch edges, where they could naturally poison the water, is also recommended. M.MCK.

111—Indian Veterinary Journal.

- a. CHOUDHURY, B., 1955.—“Nasal granuloma in the State of West Bengal. Studies on sixty-eight cases.” 31 (6), 403–414.
 b. RAMANUJACHARI, G. & ALWAR, V. S., 1955.—“A note on the occurrence of *Oesophagostomum apiostomum* (Willach, 1891) Railliet and Henry, 1905 (the simian nodular worm) in Indian monkeys.” 32 (1), 47.
 c. VARMA, A. K., 1955.—“Nasal granuloma in the State of West Bengal.” [Correspondence.] 32 (1), 76–78.

(111a) Nasal granuloma due to *Schistosoma nasalis* is very common in West Bengal except in the districts of Darjeeling, Cooch Behar, Jalpaiguri, West Dinajpur and Malda. It is commoner still in Midnapur cattle. The symptoms, treatment by potassium antimony tartrate and snail control measures are summarized. R.T.L.

(111b) *Oesophagostomum apistomum*, recorded for the first time from India, occurred in five *Macaca* sp. reported to have been caught at Pondicherry. In one monkey there were numerous hydatid cysts in the liver, spleen and lungs. M.MCK.

(111c) Commenting on Choudhury's paper on nasal granuloma in the State of West Bengal [for abstract see No. 111a above], Varma points out that there is little danger that nasal schistosomiasis will spread into West Dinajpur and Malda from cattle newly admitted from infected localities of Bihar. Cattle traffic from Bihar to that region of West Bengal is almost non-existent, and the bordering districts of Bihar, viz., Purnea and Santhal Parganas, are practically free from infection. Varma doubts if the greater incidence among bullocks can be attributed to their working harder and receiving less food and care as compared with cows, since infections not infrequently occur in animals in excellent health. The statements that the parasites are likely to mature sooner if they reach the nasal veins directly, and that those reaching different organs die before attaining maturity are merely speculative. Further studies are required before *Limnaea acuminata* can be definitely considered a potential host of *Schistosoma nasalis*. M.MCK.

112—Irish Naturalists' Journal.

- a. GOTTO, R. V., 1955.—“An Irish record of the post-larva of *Hepatoxylon trichiuri* (H. S. Holten) (Cestoda: Trypanorhyncha) in the spiny dogfish, *Squalus acanthias* (L.).” 11 (10), 290-291.

(112a) A single post-larva of *Hepatoxylon trichiuri* found free in the coelom of *Squalus acanthias* taken in the Strangford Lough, Co. Down, Ireland, is the second record from this host. R.T.L.

113—Irish Veterinary Journal.

- a. HIRSCH, E. A., 1955.—“A note on *Capillaria plica* infestation in a foxhound.” 9 (4), 106.

(113a) In the chronically thickened wall of the bladder of an Irish foxhound dog there were two male and one female specimens of *Capillaria plica* and ova were present in the urine. R.T.L.

114—Journal of Agriculture of the University of Puerto Rico.

- a. CIORDIA, H. & RIVERA-ANAYA, J. D., 1955.—“Nematode-larvae infestation in goats fed ‘malojillo’ (Pará grass) and merker grasses in Puerto Rico.” 39 (1), 22-31. [Spanish summary pp. 30-31.]
- b. GOLDSTEIN, H. L., 1955.—“A novel medium for mounting nematodes.” 39 (1), 46-47.

(114a) Ciordia & Rivera-Anaya have investigated the difference in worm burdens which resulted from feeding kids on two different grasses obtained from the same habitat. Group I was fed *Pennisetum purpurascens* var. *merkeri*, group II *Panicum purpurascens* and the controls were fed imported hay. Groups I and II became infected with *Haemonchus contortus* and *Trichostrongylus* spp. and group II also with *Oesophagostomum columbianum*. The mean faecal egg counts were 8.9 e.p.g. for group I, 48.2 e.p.g. for group II and 0.57 e.p.g. for the controls. A total of 191 nematodes was collected post mortem from group I, 1,028 from group II and three *H. contortus* from the controls. S.W.

(114b) Goldstein describes a new mounting medium for nematodes. It consists of 50 gm. distilled water, 30 gm. gum arabic (crystals), 200 gm. chloral hydrate and 20 gm. glycerin, mixed at room temperature. After mounting, slides are set by heating at 40°C. Living or dead material may be mounted directly from an aqueous medium, cuticular structures are very clear and remounting, if necessary, is simple. The addition of a few crystals of iodine to the medium shows up pharyngeal structures very clearly. S.W.

115—Journal of Animal Science.

- a. VEGORS, H. H., SELL, O. E., BAIRD, D. M. & STEWART, T. B., 1955.—“Internal parasitism of beef yearlings as affected by type of pasture, supplemental corn feeding, and age of calf.” 14 (1), 256–267.

(115a) Experiments were carried out on three different types of winter pasture in order to determine the extent of internal parasitism of beef calves, the effect of supplemental maize feeding, and the difference in the worm burden between calves born in spring and autumn. Hereford calves, which were divided into groups on the basis of age, parasite load as indicated by worm egg counts, weight and grade, were used throughout the experiments. At autopsy calves kept on fescue pastures had heavier worm burdens or showed more harmful effects of parasitism than those on temporary winter or crimson clover pastures. This was partly due to the lower nutritive value of the fescue grass, and to the high nutritional quality of the other two types of pasture which appeared to check the harmful effects of heavy infections sometimes acquired on these pastures. Other conditions being similar, calves which received a maize supplement generally had fewer worms than those which did not. Spring-born calves, as a whole, had two to three times as many worms as the older autumn-born calves. A difference of two months in the age could result in a considerable difference in the worm burden. D.M.

116—Journal of Comparative Pathology and Therapeutics.

- a. GIBSON, T. E., 1955.—“Studies on *Trichostrongylus axei*. III. The course of untreated infestations.” 65 (2), 143–148.
 b. MICHEL, J. F., 1955.—“Studies on host resistance to *Dictyocaulus* infection. I. The phenomenon of inhibited development.” 65 (2), 149–158.

(116a) Using eight lambs infected with 60,000 *Trichostrongylus axei* larvae when two months old, Gibson has shown that when the infection is untreated there are three phases. The first acute phase lasts for about six weeks and during this period three of the lambs died; this phase is characterized by a steeply rising egg count, a rapid loss of weight and severe inflammation of the abomasum. The second phase is transitory and is characterized by the animal beginning to gain weight again and the egg counts beginning to fall; the severe abomasitis regresses but the abomasum has many ulcers with raised white edges and inflamed craters. In the third phase, i.e. the chronic or recovery phase, the animals gain weight normally, the egg counts are low and the craters of the ulcers become covered with cicatricial tissue forming characteristic ringworm-like lesions. S.W.

(116b) Michel has found immature *Dictyocaulus viviparus* in the lungs of adult cattle housed, following an outbreak of acute parasitic bronchitis, for a month before death, and in animals which had shown no symptoms and which had been housed for a month or more. He has also demonstrated that, in calves which have recovered from experimental infections and been reinfected with single doses of larvae, the second infection does not become patent although immature worms persist in the lungs for some months. The worms recovered from the lungs of calves following a second infection were significantly smaller than those recovered following a first infection. When larvae were administered to susceptible calves, either in a single dose or in 20 equal daily doses, a small proportion remained undeveloped; these larvae may persist after the adults have been eliminated and are capable of resuming their development. S.W.

117—Journal of the Indian Medical Association.

- a. DUTT, A. R. & GHOSH, A. C., 1955.—“Incidence of protozoal and helminthic infections of the intestine.” 24 (12), 460–461.

(117a) Dutt & Ghosh have analysed the incidence of helminthic and protozoal infections in samples of faeces from 10,979 patients admitted to Kanchrapara Tuberculosis Hospital between 1948 and 1953. Helminth eggs were found in 471. Of these *Ascaris lumbricoides*

occurred in 2.9%, hookworm in 0.8%, *Strongyloides stercoralis* and *Trichuris trichiura* in 0.4% and *Taenia saginata* eggs and segments in 0.6%. All the tapeworm cases were male sweepers.

R.T.L.

118—Journal of Infectious Diseases.

- a. OLIVER-GONZÁLEZ, J., BAUMAN, P. M. & BENENSON, A. S., 1955.—“Species specificity of the anti-egg precipitin in schistosome serums.” 96 (1), 95–100.

(118a) Oliver-González has previously shown that when eggs of *Schistosoma mansoni* were incubated in serum from humans infected with the parasite, a circumoval precipitate is formed which seems to be the result of the interaction of specific substances in the egg with an antibody present in the serum. The authors have now demonstrated that incubation of the eggs of *S. haematobium*, *S. japonicum* and *S. mansoni* in homologous antisera results in massive precipitation around the eggs. When, however, eggs were incubated in heterologous antisera, circumoval precipitate was only observed about eggs of *S. mansoni* incubated in *S. haematobium* and *S. japonicum* antisera, and the precipitates were less massive and affected a smaller percentage of eggs than did the homologous antisera. Similar results were obtained with antisera prepared from infected mice or monkeys, or from rabbits artificially immunized with lyophilized *S. mansoni* eggs. *Fasciola hepatica* (from cattle) and *Paragonimus westermani* (of human origin) antisera all failed to react with trematode eggs of all the above species. Normal human and animal sera gave negative reactions on eggs of all species. Oliver-González points out that the results obtained indicate that there is definitely species specificity in the egg stage of the schistosomes and permits for the first time a serological identification of the infecting organism. The practical value of the circumoval precipitin reactions is indicated by the results obtained with one of the sera representing *S. haematobium* infections. This serum caused circumoval precipitation in 10.9% of *S. haematobium* eggs and 0% of *S. japonicum* eggs, but massive precipitation was formed on 48.3% of the *S. mansoni* eggs. These findings were taken to be indicative of *S. mansoni* infection and further investigation of the clinical status revealed that this individual had been exposed together with others who were subsequently proven to have *S. mansoni* infections.

D.L.H.R.

119—Journal of the Maine Medical Association.

- a. HORSMAN, D., 1955.—“Trichinosis with case studies.” 46 (3), 61–64.

120—Journal of the Marine Biological Association of the United Kingdom.

- a. HUTTON, R. F., 1955.—“*Cercaria turritellae* n.sp., a ‘huge-tailed’ monostome larva from *Turritella communis* Risso.” 34 (2), 249–255.

(120a) *Cercaria turritellae* n.sp. from *Turritella communis* in Plymouth Sound differs from *C. equitator*, *C. purpuracauda*, Miller’s *Cercaria F*, *Cercaria T*, *Cercaria U* and *Cercaria W*, and Cable’s cercaria from *T. exoleata*, by lacking eye-spots and not being an active swimmer, by the proportion of the tail (212 μ long) to the body (167 μ long), although measurements of *Cercaria W* are not known, and in the presence of proximal, fin-like ridges on the tail. Anterior body spines are absent. The large inclusions which are found in the branches of the excretory vesicle have not been observed in other long-tailed larvae of marine monostomes.

G.I.P.

121—Journal de Médecine de Lyon.

- a. ROMAN, E., 1955.—“Symptomatology des helminthiases chez l’enfant. Étude d’une centaine de cas observés à la Clinique Médicale Infantile. I. L’ascaris.” 36 (840), 1–12.
b. ROMAN, E., 1955.—“Symptomatology des helminthiases chez l’enfant. Étude d’une centaine de cas observés à la Clinique Médicale Infantile. II. L’oxyure.” 36 (842), 81–93.

122—Journal of Parasitology.

- a. KERR, K. B., 1955.—“Age of chickens and the rate of maturation of *Ascaridia galli*.” 41 (3), 233–235.
- b. MOORE, D. V. & MELENEY, H. E., 1955.—“Development of *Schistosoma mansoni* in the peritoneal cavity of mice.” 41 (3), 235–245.
- c. KNIGHT, R. A. & PRATT, I., 1955.—“The life-histories of *Allassogonoporus vespertilionis* Macy and *Acanthatrium oregonense* Macy (Trematoda: Lecithodendriidae).” 41 (3), 248–255.
- d. SELF, J. T. & ESSLINGER, J. H., 1955.—“A new species of bothriocephalid cestode, from the fox squirrel (*Sciurus niger* Linn.).” 41 (3), 256–258.
- e. ODLAUG, T. O., 1955.—“The quantitative determination of glycogen in some parasites of Amphibia.” 41 (3), 258–262.

(122b) When cercariae of *Schistosoma mansoni* were injected intraperitoneally into mice, over 50% of the worms recovered after 168 days were found in the peritoneal cavity and some of these were producing viable eggs. Females in the peritoneal cavity were about half as long as mature females which had migrated and developed in the mesenteric portal system. For the first 14 days intraperitoneal and extraperitoneal worms grew at about the normal rate, but whereas the majority of extraperitoneal worms attained sexual maturity at 42 days, the intraperitoneal females required 70–84 days and many remained immature at 168 days. Moore & Meleney followed in detail the migrations observed and describe the growth stages, based, in the very young worms, on the Greek letter system adapted to *S. mansoni* by Faust, Jones & Hoffman (1934). In spite of the cercariae being injected intraperitoneally, the migrations of the worms leaving the peritoneal cavity were apparently normal. In hamsters similarly infected, all but 1% of the worms had migrated from the peritoneal cavity by the 14th day and none were found there after 28 days. M.MCK.

(122c) Knight & Pratt describe for the first time the life-cycles of the lecithodendriid trematodes *Allassogonoporus vespertilionis* and *Acanthatrium oregonense*. Infective metacercariae were discovered in caddis-fly larvae of the genus *Limnophilus* which were fed to hamsters. Adult trematodes of both species were recovered six days later but the ratio of *Allassogonoporus vespertilionis* to *Acanthatrium oregonense* was something over 50:1, although approximately equal numbers of metacercariae were judged to have been present in the caddis-fly larvae that were used. Uninfected larvae were exposed to cercariae from naturally parasitized snails (*Oxytrema silicula*). Metacercariae were observed the next day moving in the larval body cavities and were identical with those which had developed in the hamster into adult *Acanthatrium oregonense*. In another group of caddis-fly larvae, similarly exposed to cercariae from *Fluminicola virens*, encysted metacercariae of *Allassogonoporus vespertilionis* were identified. Adults of both species were recovered from several wild bats, *Myotis lucifugus*, and one mature *Allassogonoporus vespertilionis* was recovered from the bat *Eptesicus fuscus*. The sporocyst, cercaria and metacercaria are illustrated and described for both species. The cercariae are xiphidiocercous and belong to the *virgulae* group of Lühe. In the adult of *Acanthatrium oregonense* the oesophagus was observed for the first time. It doubles back on itself dorsally as a loop and joins the caeca usually just adjacent to the pharynx. The excretory bladder, which was not mentioned in Macy's original description, is thin walled and of a broad V-shape, occupying most of the posterior half of the worm. M.MCK.

(122d) *Bothriocephalus sciuri* n.sp., believed to be the first *Bothriocephalus* species to be found in a mammal, is reported from the fox squirrel *Sciurus niger* in Oklahoma. It was found in the stomach, which was empty, and was believed to have moved there from the intestine after the host's death. The worm resembles *B. cuspidatus* but the scolex is relatively much larger and has a more lobed terminal disc, the testes are more numerous, averaging 95 per segment, and there are four subsegments instead of 32. M.MCK.

(122e) Odlaug has estimated the glycogen content of a number of helminth parasites of *Rana* spp. *Haematoloechus complexus* and *H. medioplexus* from the lungs possessed significantly less glycogen than did *Crepidobothrium saphena* from the intestine, and encysted metacercariae

122—Journal of Parasitology (cont.)

- f. LEIGH, W. H., 1955.—“The morphology of *Gigantobilharzia huttoni* (Leigh, 1953) an avian schistosome with marine dermatitis-producing larvae.” 41 (3), 262–269.
- g. VOGEL, M., 1955.—“*Hymenolepis virilis* n.sp., a cestode from the shrew *Sorex trowbridgei* in California.” 41 (3), 270–272.
- h. COIL, W. H., 1955.—“*Infula macrophallus* sp.nov., a dioecious cestode parasitic in the black-necked stilt, *Himantopus mexicanus*.” 41 (3), 291–294.
- i. BAUMAN, P. M., BERRIOS-DURAN, L. & McMULLEN, D. B., 1955.—“Effectiveness of Abbott's Insect Repellent Cream (E 4856) as a protective barrier against *Schistosoma mansoni* in mice.” 41 (3), 298–301.
- j. SCOTT, D. M., 1955.—“On the early development of *Porrocaecum decipiens*.” 41 (3), 321–322.

of *Clinostomum attenuatum* from the abdominal muscles. The glycogen content of *Gorgoderia amplicava* and *Gorgoderina attenuata* from the bladder was similar to that of *Haematoloechus* spp. Starvation of the host did not affect the glycogen content of the encysted forms. S.W.

(122f) Leigh successfully infected parakeets with *Cercaria huttoni*, a dermatitis-producing cercaria from the marine snail *Haminoea antillarum guadalupensis* collected at Virginia Key, Florida. The adults, described for the first time, were recovered from minute veins in the intestine and were identified as *Gigantobilharzia*. Viable eggs, occasionally presenting a rudimentary terminal spine, were found in the faeces and villi. Immature worms were recovered from the liver. The male of *G. huttoni* is about 4.72 mm. long, has about 60 testes and its caeca unite in the posterior third of the gynaecophoric canal, well anterior to the testes. In the female, which measures 5.26–7.22 mm., the genital pore opens a little behind the mouth and there appears to be one egg in the uterus. Both sexes lack suckers. Study of the cercaria under phase contrast revealed that, contrary to Leigh's description of three pairs of penetration glands, six pairs are present in cercariae dissected from the snail. One pair of these empties before emergence from the mollusc. The natural vertebrate host is unknown. M.MCK.

(122g) *Hymenolepis virilis* n.sp. from *Sorex trowbridgei* in California is most similar to *H. lineola*. It differs from all other *Hymenolepis* species in the possession of a large conspicuous cirrus and cirrus armature and from other hymenolepids found in shrews in the shape of the ten rostellar hooks. M.MCK.

(122h) Coil describes and illustrates *Infula macrophallus* n.sp., a dioecious cestode from black-necked stilts (*Himantopus mexicanus*) in Oaxaca, Mexico. It differs from *I. burhini* in having a larger scolex (diameter 0.53 mm. in the female, 0.5 mm. in the male), larger suckers (0.25–0.27 mm. × 0.32–0.36 mm. in the female and 0.18–0.22 mm. × 0.22–0.25 mm. in the male), larger embryonic hooks and a smaller number (30–50) of testes. This new species lacks rostellar hooks, thus confirming the observations of Burt and of Vogé & Read on *I. burhini* and removing most of the doubt concerning the validity of the genus *Infula*. M.MCK.

(122i) Under certain conditions Abbott's Insect Repellent Cream (E-4856) effectively prevented the penetration of *Schistosoma mansoni* cercariae into mice. The cream was applied to the tails several hours or days before exposure and was spread thinly, the excess being removed with a damp cotton sponge. All of 25 mice exposed to 150 cercariae six hours or less after a single application of ointment were free of schistosomes; of 15 exposed 12 hours after application only one was infected and had 15 adult worms. Exposure to 100 cercariae 24 hours after treatment resulted in infection in all of 10 mice but the largest number of worms found in a treated mouse was 21 while 40 was the smallest number in a control. Even in a group exposed after 72 hours, during which time the tails had been soaked daily for an hour in water, the average number of worms was 20.5 as compared with 54.6 in the controls. M.MCK.

(122j) The ova of *Porrocaecum decipiens* from *Phoca vitulina* develop in sea water. They hatch at 13°C. to 14°C. as second-stage larvae but as they are unable to free themselves from the first larval cuticle it is inferred that this has to be dissolved in an intermediate host. There is a direct relationship between the rate of development and temperature. R.T.L.

122—Journal of Parasitology (cont.)

- k. BULLOCK, W. L., 1955.—"The occurrence of *Neoechinorhynchus cristatus* Lynch, 1936, (Acanthocephala) in eastern North America." 41 (3), 323-324.
- l. AMEEL, D. J., 1955.—"Parasites of the coyote *Canis latrans* Say, in Kansas." 41 (3), 325.
- m. MARGOLIS, L., 1955.—"*Corynosoma hadweni* Van Cleave a probable synonym of *C. wegneri* Heinze (Acanthocephala)." 41 (3), 326-327.
- n. HOFFMAN, G. L., 1955.—"Notes on the life cycle of *Fibricola cratera* (Trematoda: Strigeida)." 41 (3), 327.
- o. STIREWALT, M. A. & BRONSON, J. F., 1955.—"Description of a plastic mouse restraining case." 41 (3), 328.
- p. CHURCHILL, H. M., 1955.—"Survival of frog lung flukes, *Haematoloechus* sp., in certain artificial media." 41 (3), 328-329.
- q. PELLEGRINO, J. & MACEDO, D. G., 1955.—"A simplified method for the concentration of cercariae." 41 (3), 329-330.

(122k) *Neoechinorhynchus cristatus* has hitherto been reported from western North America and, with *N. venustus* and *Octospinifer torosus*, has been thought to represent a distinctive acanthocephalan fauna of the Catostomidae of the Rockies. A survey of the fishes from several localities in south-eastern New Hampshire has yielded many specimens resembling *N. cristatus*. Although they show a slightly smaller hook size and smaller lemnisci and the male genitalia occupy less body space, there is a pronounced overlap between all these features and those of western material. In spite therefore of the apparent discontinuity in distribution the New Hampshire specimens are considered to belong to *N. cristatus*. R.T.L.

(122l) The helminth incidence in 1,142 *Canis latrans* in the State of Kansas was *Taenia pisiformis* 92.8%, *Physaloptera* spp. (*P. rara* and *P. praeputialis*) 60.4%, *Ancylostoma caninum* 19.8% and *Toxascaris leonina* 19.3%. *Dirofilaria immitis*, not previously recorded from Kansas, occurred in eight out of 954 specimens and *Trichuris vulpis* in seven out of 63 animals examined. R.T.L.

(122m) Margolis gives a table in which the various measurements of *Corynosoma hadweni* and *C. wegneri* are compared. He notes that there are discrepancies between the text and the illustrations of the number of proboscis hooks in the accounts given of both species but concludes that *C. hadweni* is probably a synonym of *C. wegneri*. R.T.L.

(122n) Hoffman has repeated the life-cycle of *Fibricola cratera*. The maximum longevity of the miracidium was seven hours and that of the cercaria, developed in *Physa gyrina*, was 52 hours. Infected snails could be kept alive by refrigeration and produced cercariae for as long as 45 days. Tadpoles, but not adults, of *Rana pipiens*, *R. clamitans* and *Pseudacris nigrita tricerata* were infected. Laboratory rats could be infected with 35-day-old metacercariae but not by those 15 to 22 days old. A young *Cricetus auratus* yielded two adults when autopsied after 60 days. R.T.L.

(122o) Olivier & Stirewalt's method for exposing mice by tail to known numbers of schistosome cercariae is modified by replacing the restraining boards by clear plastic restraining cages bored out of plastic blocks. Six small holes through the plastic provide ventilation. Withdrawal of the tail is prevented by adhesive strips. R.T.L.

(122p) *Haematoloechus* sp. were transferred to 58 cultures in artificial media based on Bacto Nutrient Agar supplemented by 0.5% dextrose, 0.25% Bacto yeast extract and 0.25% haemoglobin powder, singly or in combination, and on amphibian Ringer's solution. Bacteria-free trematodes were obtained relatively easily but none of the media was adequate to maintain the flukes. The egg contents were reduced to granular debris and no new eggs were formed. Deterioration of the gonads was evident within two or three days. R.T.L.

(122q) To obtain schistosome cercariae relatively free from contamination, the molluscs are washed in tap-water, cleaned with a soft toothbrush, rinsed in tap-water and dispersed into beakers of 100 ml. capacity. Five or six molluscs can be put in a single beaker with 50 ml. of filtered spring water. A dense cercarial suspension is obtained by exposure to indirect

122—Journal of Parasitology (cont.)

- r. MALEWITZ, T. D. & LYSENKO, M. G., 1955.—"Incidence of *Enterobius vermicularis* in 535 Puerto Rican children." 41 (3), 330-331.
- s. MENZEL, R. W. & HOPKINS, S. H., 1955.—"The growth of oysters parasitized by the fungus *Dermocystidium marinum* and by the trematode *Bucephalus cuculus*." 41 (4), 333-342.
- t. LEVINE, N. D., 1955.—"A punched card system for filing parasitological bibliography cards." 41 (4), 343-352.
- u. MARTIN, W. E. & KUNTZ, R. E., 1955.—"Some Egyptian heterophyid trematodes." 41 (4), 374-382.
- v. MILLEMANN, R. E., 1955.—"Studies on the life-history and biology of *Oochoristica deserti* n.sp. (Cestoda: Linstowiidae) from desert rodents." 41 (4), 424-440.

sunlight for two or more hours. A small volume of heavy cercarial suspension can be obtained by transferring the cercariae in the beakers to crucibles fitted with permanent porous plates. Each crucible is placed in a crystallizing dish. The degree of concentration can be controlled by changing the water level in the crystallizing dish. A relatively pure cercarial suspension can be obtained in large amounts by using a Büchner funnel with fused-in fritted disc of medium porosity adapted to a suction flask. R.T.L.

(122s) In a study of the growth of Louisiana oysters during sixteen months, one was found at the end of the experiment to be infected by sporocysts of *Bucephalus cuculus*. Whereas the uninfected oysters grew at an almost constant rate, the one infected with *B. cuculus* grew unusually fast until the latter months when it lagged behind the uninfected oysters. It is suggested that *B. cuculus* may cause an increase in growth rate in the early stages and a slowing down in the later stages when the sporocysts spread from the gonad to the gills, mantle and muscle. The inclusion of parasitized individuals in a growth experiment may lead to erroneous conclusions if the growth curves are interpreted as normal. R.T.L.

(122t) Levine describes a coding system for filing abstracts and references to parasitological literature using 3 inch by 5 inch punched cards. Codes are given for punching information on taxonomy, subject, host and author around the card edges. The cards for different types of information can be rapidly segregated by a sorting needle. R.T.L.

(122u) Adults of *Stictodora tridactyla* n.sp. were obtained by feeding naturally infected *Aphanius fasciatus* (caught in Lake Burullus, Egypt) to chickens. Rediae and cercariae were found in *Pironella conica*. The metacercariae were obtained by submitting *Gambusia affinis* to infection and adults were reared in hatchery chicks in a week. In *S. tridactyla* the caeca are shorter and the vitellaria extend farther anteriorly than in other species of *Stictodora*. The cercaria is biocellate and parapleurolophocercous and the formula of the excretory system is $2[(3+3+3)+(3+3+3)]=36$. The redia and cercaria of an unidentified *Heterophyes* were also present in *P. conica*. The excretory pattern was the same as in *S. tridactyla* and the cercaria was biocellate but pleurolophocercous. R.T.L.

(122v) *Oochoristica deserti* n.sp. collected from the Californian desert rats, *Dipodomys m. merriami* and *Citellus leucurus*, differs from the other 21 valid species in mammals other than rodents in the size and the length of the cirrus sac, the size of the scolex, the number of testes, the size of the suckers, the position of the vaginal opening in relation to the cirrus sac and the arrangement of the gonopores. It closely resembles *O. symmetrica* of rodents but has slightly smaller suckers, the testes are in two layers instead of mainly in one and tend to be fewer in number, the cirrus sac is wider and extends to the inner longitudinal excretory duct, the ovary is slightly smaller, and the genital ducts pass dorsally to the longitudinal excretory ducts. By using vital staining and phase microscopy the presence of penetration glands was observed in the oncosphere of *Oochoristica deserti*. By feeding the oncospheres to arthropods, cysticercoids were obtained in *Gnathocerus cornutus*, *Tribolium confusum*, *Tenebrio molitor*, *Dermestes maculatus* larva and *Ephestia cautella* larva but not in acarid mites. Adults were reared experimentally in the rodents *Dipodomys m. merriami*, *D. panamintinus mohavensis*, *Citellus leucurus*, *Perognathus longimembris* and *Mesocricetus auratus*. R.T.L.

122—Journal of Parasitology (cont.)

- w. CABLE, R. M., 1955.—"Taxonomy of some digenetic trematodes from sturgeons." 41 (4), 441.
- x. BOOTH, E. S., 1955.—"Parasites from coati (*Nasua narica*)." 41 (4), 441.
- y. LUNDAHL, W. S., 1955.—"Notes on collecting trematode-infected Amnicolidae in deep waters." 41 (4), 442.

(122w) As *Pristotrema* is a synonym of *Skrjabinopsolus*, *P. manteri* thus becomes *S. manteri* (Cable, 1952) n.comb. *Distomum semiarmatum* is probably a species of *Skrjabinopsolus*, and *D. ellipticum* of *Deropristis*. These trematodes belong to the Lepocreadiidae rather than to the Acanthocolpidae. Although Ivanov & Murigin (in Skryabin Jubilee Volume 1937, 253-268) describe a seminal receptacle in the female complex as a specific character of *S. acipenseris*, they omitted this highly important feature from the generic diagnosis. Bikhovski & Dubinina (in *Zool. Zh.*, 1954, 33, 788-793) missed this in *S. acipenseris* and probably also in their new genus *Paratormopsolus*. R.T.L.

(122x) A coati, *Nasua narica*, captured north of Arriaga, Chiapas, in southern Mexico, contained several *Physaloptera maxillaris* and *Prosthenorchis lühei* and two females of a *Trichuris* sp. *N. narica* is probably a new host record for *Trichuris*. R.T.L.

(122y) The Reighard net, consisting of a fine mesh cone net suspended from a triangular, serrated, steel rim with three rods extending the length of the net which serve as runners, proved very effective in collecting amnicolid molluscs when towed through vegetation in deep water and in the interdepression area of Douglas Lake, Michigan. As a number of species of cercariae were present in these molluscs and as aqua lung equipment also disclosed the presence of snails and fish in large numbers, it is suggested that these collecting techniques might be useful in other inland lakes where such material is sought for studying trematode life-histories. R.T.L.

123—Journal of Pediatrics.

- a. ALLEN, Jr., F. P., 1955.—"A new approach in the therapy of *Enterobius* (pinworms)." 46 (2), 155-157.
- b. PRYOR, H. B., 1955.—"*Oxyuris vermicularis*: the most prevalent parasite encountered in the practice of pediatrics." 46 (3), 262-267.

(123a) Allen obtained a high rate of cure of *Enterobius* by combining with oral medication the use of suppositories in order to break the life-cycle of reinfection by killing the adult females before they can lay their eggs on the perianal surface. Oral medication with gentian violet, Antepar or Diphenan was administered for one week, and after one week's interval for a second week. The suppositories, containing 0.25% gentian violet and 2% benzocaine in a polyethylene glycol base which included polyoxyethylene sorbitan monosterate as a special dispersing agent, were given for 14 consecutive nights. The results were checked by a modified Scotch tape method or by finding live *Enterobius*. Cure resulted in 97% of the cases treated whereas only 65% were cured by the use of a suppository alone. R.T.L.

124—Journal of the Soil Science Society of the Philippines.

- a. HOSKINS, C. M., 1955.—"Economic importance of nematode research." 7 (2), 78-83.
- b. NEWHALL, A. G., 1955.—"Nematodes in soils as plant diseases inciters." 7 (2), 90-97."

(124a) Hoskins believes that soil scientists should study nematodes as part of the biological complex of the soil. He gives a brief account of the types of damage they may do to crops and indicates control measures. He recommends that this study should be promoted in the Philippines where little attention has so far been paid to plant-parasitic nematodes. M.T.F.

(124b) Newhall outlines some of the symptoms caused by plant-parasitic nematodes and gives short accounts of the life-histories and control of several of the better known types. The only one known in the Philippines is the root-knot nematode. M.T.F.

125—Journal of Tropical Medicine and Hygiene.

- a. EL-GHOLMY, A., NABAWY, M., GABR, M., AIDAROS, S. & OMAR, A., 1955.—“Hepatic schistosomiasis in children.” 58 (2), 25-33.
- b. CLARKE, V. DE V. & GOODLIFFE, F. A., 1955.—“Control of bilharziasis: a simple device for measuring copper concentration in natural waters treated with copper sulphate.” 58 (4), 80-85.
- c. JORDAN, P., 1955.—“Notes on elephantiasis and hydrocoele due to *Wuchereria bancrofti*.” 58 (5), 113-118.
- d. ALHADEFF, R., 1955.—“Clinical aspects of filariasis.” 58 (8), 173-179.

(125a) As a result of a comprehensive clinical, radiological and laboratory study of 127 cases of schistosomiasis in Egyptian children, it was ascertained that hepatic schistosomiasis was present in 78.8%. The liver was involved in 66.6% of those with only vesical lesions and in 100% of those with both vesical and intestinal infections. Four stages in the development of the hepatic lesions are recognized, viz., pre-cirrhotic, early cirrhotic, established cirrhotic and advanced cirrhotic. All the cases of advanced cirrhosis were due to *Schistosoma mansoni* infection. Late stages were commoner in combined infections than in those purely vesical. There is evidence that a toxic factor and a mechanical factor participate in the causation of splenic enlargement, the mechanical factor acting in advanced cases only. Treatment is followed by marked diminution in the size of the liver and spleen only in the early cirrhotic stage. The degree of portal hypertension was found to be proportionate to the degree of fibrosis of the liver. There was no evidence of leucocytosis in the early stages or of leucopenia in the late stages of hepatic schistosomiasis. R.T.L.

(125b) The presence of copper in concentrations as low as three parts per million can be detected by the use of potassium ferrocyanide as a reagent. The colour, due to the formation of copper ferrocyanide, varies in density with the amount of copper present in the water. This can be measured rapidly in the field by the simple and effective apparatus now described and illustrated and named a “copper colordensitometer” R.T.L.

126—Journal of the Washington Academy of Sciences.

- a. LORDELLO, L. G. E., 1955.—“A new nematode, *Rotylenchus melancholicus*, n.sp., found associated with grass roots, and its sexual dimorphism.” 45 (3), 81-83.

(126a) In *Rotylenchus melancholicus* n.sp. the male is smaller than the female and has a shorter stylet without basal knobs, and an ill-defined oesophagus. The male is distinguished from those of other species by its long, ventrally arcuate tail ($c=16.7-16.8$) and the possession of only a vestigial bursa. The female is similar to *R. erythrinae* but shorter (514.6μ to 533.0μ as compared with 610μ to 920μ) and with a longer tail ($c=23.8-24.6$ as against $41-64$). It differs from *Helicotylenchus nannus* in having a receptaculum seminis in each of the amphidelphic gonads. In spite of the poorly developed stylet and oesophagus of the male, Lordello considers that it does feed since he found plainly visible “salivary glands” in one individual. M.T.F.

127—Kieler Meeresforschungen.

- a. MEYL, A. H., 1955.—“Über einige an den deutschen Küsten vorkommende Arten der Nematodengattung *Mononchus* Bastian 1865.” 11 (1), 80-85.
- b. SCHÜTZ, L. & KINNE, O., 1955.—“Über die Mikro- und Makrofauna der Holzpfähle des Nord-Ostseekanals und der Kieler Förde.” 11 (1), 110-135.

(127a) Meyl describes four species of *Mononchus* found on the German coast. He distinguishes between *Mononchus* (*Myelonchulus*) *rotundicaudatus* (Skarra, 1934) T. Goodey, 1951 [not a new combination] and *Mononchus rotundicaudatus* Schulz, 1934 which he renames *Mononchus* (*Sporonchulus*) *schulzi* nom.nov. J.B.G.

(127b) An ecological study of the fauna of the wooden piles in the “Nord Ostsee” canal and of Kiel bay was carried out. Among other fauna the numbers and distribution of 32 species of nematodes are given. J.B.G.

128—Lancet.

- a. DUNN, T. L., 1955.—“Effect of piperazine derivatives on certain intestinal helminths.” Year 1955, 1 (6864), 592–593.

(128a) Children with intestinal helminths were treated with hetrazan (13 mg. per kg. body-weight), piperazine hydrate (75 mg. per kg.) or piperazine adipate (300 mg. per year of age to a maximum dose of 1,800 mg.) daily for three days. The doses were administered singly and not divided as recommended by the manufacturers. Food intake was not regulated nor were supplementary medicines administered. *Necator americanus* egg counts were not reduced in children given any of the three drugs. The number of children with *Ascaris* who were free of ova two-and-a-half weeks after treatment was 12 out of 54 given hetrazan, 20 out of 26 given piperazine hydrate and 45 out of 47 given the adipate. Of those with *Trichuris* 4 out of 22 who received piperazine hydrate and 28 out of 31 given piperazine adipate were free of ova after the same period. Four children with *Hymenolepis* who were treated with piperazine adipate were unaffected. Piperazine adipate was the most effective against both *Ascaris* and *Trichuris*.
M.MCK.

129—M.S.C. Veterinarian. Michigan State College.

- a. DIKMANS, G., 1955.—“Know your parasites.” 15 (3), 151–159.

130—Medycyna Weterynaryjna.

- a. STAŚKIEWICZ, G., 1955.—“Fluorek sodowy jako środek do zwalczania glistnicy świń.” 11 (1), 39–41.
b. SKRYABIN, K. I., 1955.—“Perspektywy rozwoju radzieckiej helmintologii.” 11 (2), 65–68.
c. STEFANSKI, W., 1955.—“Stan badań nad inwazyjnymi chorobami pastwiskowymi.” 11 (2), 69–73.
d. SIMUNEK, J., 1955.—“Benzyna jako środek przeciwbaczy.” 11 (2), 100–103.

(130a) This is a review of the experimental results published by various authors on the use of sodium fluoride for ascariasis in pigs, its advantages, methods of application, dosages and toxicity.
G.I.P.

(130c) This report, read at the fourth congress of the Polish Parasitological Society held in 1954, summarizes the work done in Poland, in the two years since the third congress, on worm diseases contracted by cattle and sheep on pastures.
G.I.P.

(130d) In view of the cheapness and ready availability of benzene, Simunek reviews literature on its anthelmintic application and concludes that it is principally suitable for use in man and poultry. He has confirmed that the toxicity of benzene is mainly caused by inhalation of its vapour, by placing rats over vapour from 10 ml., 6 ml., 3 ml. or 1 ml. of benzene on cotton wool. All died, except those inhaling the vapour of 1 ml. for one hour, due to interference with respiration and had distended lungs, liver and spleen. Four rats which received 12.6 ml. to 16.6 ml. of benzene per kg. body-weight were depressed and refused food for three days; they then returned to normal. Attention is drawn to the fact that benzene is not a standard product.
G.I.P.

131—Mycologia.

- a. DUDDINGTON, C. L., 1955.—“A new species of *Stylopaga* capturing nematodes.” 47 (2), 245–248.

(131a) *Stylopaga grandis* n.sp. is an obligate zoopagaceous fungus which captures nematodes when they touch hyphae by the secretion of a sticky substance at the point of contact. Duddington isolated it from rotting plant material from Ashted Wood, near Leatherhead, England.
J.B.G.

132—Nachrichtenblatt des Deutschen Pflanzenschutzdienstes. Stuttgart.

- a. MEYL, A. H., 1955.—“Über ein seltenes Massenaufreten der pflanzenparasitischen *Hemicycliophora typica* de Man 1921 (Nematoda, Criconematidae) sowie Ergänzungen zu ihrer Beschreibung.” **7** (1), 1-3.

(132a) *Hemicycliophora typica* was found for the first time in Germany. Meyl describes its mass occurrence associated with the roots of *Artemisia* sp. The degenerate male only lives for a short time and reproduction can only take place in this bisexual species when both are present in “knots” (Nesterbildung). Additional details of the body structure are given. J.B.G.

133—Nature. London.

- a. MICHEL, J. F., 1955.—“Parasitological significance of bovine grazing behaviour.” [Correspondence.] **175** (4468), 1088-1089.
 b. PERKINS, E. J., 1955.—“Permanent preparations of nematodes.” [Correspondence.] **175** (4468), 1090.
 c. SMITH, A., 1955.—“Microfilaraemia in rock rabbits.” [Correspondence.] **176** (4470), 38-39.
 d. RAWSON, D., 1955.—“Maturation divisions of the ova in the pseudophyllidean cestode, *Eubothrium crassum* (Bloch).” [Correspondence.] **176** (4473), 167.
 e. CHOWDHURY, A. B., DASGUPTA, B. & RAY, H. N., 1955.—“‘Kernechtrot’ or nuclear fast red in the histochemical detection of calcareous corpuscles in *Taenia saginata*.” [Correspondence.] **176** (4484), 701-702.

(133a) Fewer *Dictyocaulus viviparus* larvae were present in samples of grass taken from immediately beside freshly bitten grass than in random samples. The success of the grazing animal in avoiding infection is apparently dependent on more than its ability to distinguish between short grass and the rank tussocks around faecal pats. R.T.L.

(133b) Perkins' new method of making permanent mounts of free-living nematodes consists in mounting them in solution of Perspex in creosote. Perspex powder is added to creosote and heated on a water-bath until a solution of the required viscosity is obtained. The nematodes are killed in hot 70% alcohol, washed in 70% alcohol, cleared in creosote and then mounted in the Perspex solution. R.T.L.

(133c) Microfilariae occurred in 57% of 28 specimens of the rock rabbit *Heterohyrax syriacus diesneri* examined on Ukara Island, Tanganyika. Data are tabulated and reveal an interesting correlation between the size of host and the intensity of the infection. R.T.L.

(133d) Rawson has demonstrated that in *Eubothrium crassum* the polar bodies formed during maturation of the ovum are easily distinguishable from yolk cells. She concludes that the uterine duct between the oviduct and Mehlis' gland, usually referred to as the “fertilization canal” or “befruchtungsgang”, is a duct through which the contents pass quickly. Her observations on *E. crassum* agree with those of Motomura on *Archigetes appendiculatus*; fertilization takes place in that part of the uterine duct immediately beyond Mehlis' gland. There are three photomicrographs of the egg complex. S.W.

(133e) In this preliminary note Chowdhury *et al.* confirm the specificity of “Kernechtrot” or nuclear fast red for soluble inorganic calcium salts in histochemical studies. As test material they used proglottides of *Taenia saginata* which contain calcareous corpuscles and found that the corpuscles stained brilliant red. Identical sections of the same material from which calcium had been removed failed to take up the dye. S.W.

134—Nebraska Experiment Station Quarterly.

- a. SCHUSTER, M. L., 1955.—“Sugar beet growers can starve out nematodes.” **3** (3), 10-11.

(134a) This is a general account of the life-history, means of spread and symptoms caused by root-knot nematodes. In western Nebraska at least two species are known. The more common one, which is also the more harmful to sugar-beet, does not attack lucerne, potatoes or beans. The other is less damaging to sugar-beet but it does attack the other hosts

mentioned. Neither attacks barley, corn, oats or grasses. Rotation is an effective means of control if susceptible weeds, of which *Kochia* is a common one, can be eliminated both from fields and from irrigation ditches. M.T.F.

135—New England Journal of Medicine.

- a. SHOUL, M. I., 1955.—"Tuberculosis and parasitism as causes of abdominal pain in Korean patients." 252 (2), 41-44.
- b. SEGAR, L. F., KASHTAN, H. A. & MILLER, P. B., 1955.—"Trichinosis with myocarditis. Report of a case treated with ACTH." 252 (10), 397-398.

(135a) Abdominal pain in Korean patients requires a different interpretation from that in western patients. Heavy infestation with intestinal parasites may give a clinical picture similar to that of the acute abdominal emergencies requiring laparotomy. Infection with *Clonorchis sinensis* may resemble obstructive jaundice. R.T.L.

(135b) Segar *et al.* report on the treatment of severe trichinelliasis with myocarditis by means of ACTH given intramuscularly combined with a low salt diet. There was clinical improvement and prompt suppression of the myocarditis. S.W.

136—North American Veterinarian.

- a. BOUGHTON, D. C., 1955.—"The care and feeding of livestock parasites." 36 (1), 26-29.
- b. MCGILVRAY, C. L. & BROWN, N. M., 1955.—"An uncommon case of helminthiasis in a dog." 36 (1), 47-48.
- c. SENTER, H. G. & MCCOTTERY, A. P., 1955.—"Intussusception in whipworm infestation." 36 (1), 51.
- d. MADDY, K. T., 1955.—"Stephanofilial dermatitis of cattle." 36 (4), 275-278.

(136a) Boughton reviews the economic loss caused by internal parasites in cattle, sheep and pigs, particularly by the low level subclinical infections; these cause no disease symptoms but are responsible for general unthriftiness. The use of phenothiazine would control worm infections, resulting in increased weight gains and improvement in general condition and would thus substantially lessen the economic loss. S.W.

(136b) An infection of *Diocotophyme renale*, revealed by the presence of ova in the urine of a one-year-old dog, was cured by the surgical removal of the right kidney which contained two male and two female worms. A year later the dog was perfectly healthy. M.MCK.

(136d) Maddy describes the dermatitis in cattle caused by *Stephanofilaria stilesi* and gives some of his observations on the disease in western districts of the U.S.A. The worms probably enter through the lesions caused by biting flies and are carried either by the flies themselves or by other visiting insects. No treatment is known but the author recalls details of successful treatment of dermatitis produced by three other nematodes. M.MCK.

137—Notiziario sulle Malattie delle Piante. Milan.

- a. BARESI, F., 1955.—"La lotta contro le anguillule delle foglie dei crisantemi mediante l'insetticida sistemico selettivo 'Systox'." No. 29, pp. 3-7.

(137a) Systox was tested against the eelworm *Aphelenchoides ritzema-bosi* on *Chrysanthemum indicum* in Italy, where the disease is especially common along the Florentine coast. Plants, which were considerably attacked especially on the lower leaves, were sprinkled twice at an interval of five days, in warm dry weather, with a 0.05% solution at the rate of about 40 c.c. per plant. Two areas were treated, one of 240 sq.m. with 4,250 plants and one of 100 sq.m. with 830 plants. Three days later microscopic examination showed that all the worms were dead. Baresi recommends two applications at intervals of four or five days in hot weather when the plants are at their height of activity. Under unfavourable conditions four applications may be necessary. For root-attacking nematodes such as *Heterodera marioni*, *H. rostochiensis*, *H. schachtii*, *H. tritici* and *H. avenae*, a fumigant should be applied 20 or

more days before sowing, at points 30 cm. apart, to a depth of 15–20 cm. and at the rate of 3–5 quintals per hectare. The commonest fumigants used in Italy are D-D mixture, Nematox, ethylene dibromide and Nemacid.

M.MCK.

138—Ohio Journal of Science.

- a. OSWALD, V. H., 1955.—“The taxonomics of the genus *Protogynella* Jones, 1943 (Cestoda: Hymenolepididae), with a description of *Protogynella pauciova* n.sp. provis.” 55 (4), 200–208.

(138a) The rostellum in the genus *Protogynella*, originally described as unarmed, has a large but variable number of minute hooks. Its “protogynous development” was a misinterpretation. *P. blarinae* Jones, 1943 is redescribed in the light of these new facts and the diagnosis of the genus is emended. *P. pauciova* from *Blarina b. brevicauda* in Ohio is provisionally named as a new species, differing from *P. blarinae* in that it has only two eggs per proglottis, the eggs lack polar filaments, the genital pores are sinistral and the cirri are spinose.

R.T.L.

139—Phytopathology.

- †a. CAIRNS, E. J., 1955.—“Pathogenicity of plant-parasitic nematodes in the absence of associated microorganisms.” 45 (6), 346–347.
 †b. CRITTENDEN, H. W., 1955.—“Root knot nematode resistance of soybeans.” 45 (6), 347.
 †c. FELDMESSER, J. & FEDER, W. A., 1955.—“Organic mercury dips for the control of nematodes in roots of living plants.” 45 (6), 347.
 †d. GRAHAM, T. W., 1955.—“Pathogenicity of *Rotylenchus brachyurus* on tobacco and of *Gricenemoides* sp. on tobacco and peanuts.” 45 (6), 347.
 †e. HENDERSON, R. G. & WILLIAMS, A. S., 1955.—“Effect of soil insecticide treatments on alfalfa stem nematode.” 45 (6), 348.
 †f. KRUSBERG, L. R. & SASSER, J. N., 1955.—“The lance nematode, *Hoplolaimus coronatus*, a parasite of cotton.” 45 (6), 349.
 †g. MARTIN, W. J. & NEWSOM, L. D. & JONES, J. E., 1955.—“Relationship of nematodes of the genera *Meloidogyne*, *Tylenchorhynchus*, *Helicotylenchus* and *Trichodorus* to the development of Fusarium wilt in cotton.” 45 (6), 349.
 †h. MOORE, E. L., DROLSOM, P. N. & CLAYTON, E. E., 1955.—“High black shank resistance and tolerance to parasitic nematodes in flue-cured tobacco.” 45 (6), 349.
 †i. NUSBAUM, C. J., 1955.—“Variable effects of nematocides on parasitic nematode populations in row-fumigated tobacco plots.” 45 (6), 349.
 †j. NUSBAUM, C. J. & SASSER, J. N., 1955.—“Comparison of Dowfume W-85 and D-D mixture applied as liquids and impregnated on vermiculite for nematode control.” 45 (6), 349–350.
 †k. TARJAN, A. C. & CHEO, P. C., 1955.—“Reduction of root-parasitic nematode populations in established bent grass turf by use of chemical drenches.” 45 (6), 350.

(139a) Cairns carried out experiments in which mushroom cultures, inoculated with “disinfested” specimens of a *Ditylenchus* species, became diseased within four to seven days. Other cultures cut and inoculated with (i) “contaminants” [presumably from the nematodes], (ii) fragmented, surface-disinfested nematodes and (iii) sterile water used in disinfecting the nematodes, showed no signs of injury beyond the site of the wounding. It is concluded that living *Ditylenchus* sp. can cause injury and eventual destruction of *Agaricus campestris* in the absence of other organisms, and that micro-organisms without nematodes cannot cause extensive damage.

M.T.F.

(139b) Crittenden found high resistance to *Meloidogyne incognita* var. *acrita* in 10 out of 50 soya bean varieties tested, namely, Laredo, Mukden, Anderson, Monroe, Blackhawk, Peking, Mendota, Haberlandt, Habaro and Mandarin. These include representatives from all maturity groups. The first five were also tested against *M. hapla* and all were susceptible. It is emphasized that the growing of a crop resistant to *M. incognita* var. *acrita* may selectively increase *M. hapla* and it is therefore necessary to identify the species of *Meloidogyne* present if crop rotations are to be used for control.

M.T.F.

† Abstract of paper presented at the Annual Meeting of the Southern Division, American Phytopathological Society, Louisville, Ky, February 7–9, 1955.

(139c) Larvae within cysts of *Heterodera rostochiensis* are reported to be killed by exposures to either of two organic mercurials, Aaventa and Aabulba, at doses of 2% for ten minutes, 1% for one hour, 0.5% for three hours or 0.25% for six hours. The bare roots of various ornamentals infested with *Pratylenchus* spp. and *Meloidogyne* spp. were rendered free from viable nematodes by a one-hour dip in Aaventa. Aabulba is equally nematocidal but more phytotoxic than Aaventa. Observations indicated that the nematodes are killed within 48 hours of treatment. M.T.F.

(139d) In green-house soil cultures *Rotylenchus brachyurus* increased equally well on sweet potato, tobacco and *Crotalaria striata*. In pathogenicity trials with Golden Cure tobacco, populations of 4,000 to 5,000 *R. brachyurus* per gallon of soil caused root weight, top weight and height to be respectively 57%, 43% and 40% below those of plants grown in nematode-free soil. In field trials with Hicks tobacco, height was significantly less on infested than on control plots but green weight of leaves, stalks and roots did not differ from the control. Root lesions were present but injury was not great and no general decay was observed. *Criconemoides* sp. was also studied in green-house trials on tobacco and Spanish peanuts. Both crops were reduced in height and in green weight of tops and roots. There was much root decay in the peanuts but little in the tobacco. M.T.F.

(139e) Aldrin at 2 lb. per acre and parathion dust at 5 lb. per acre were broadcast and disked into soil infested with the lucerne race of *Ditylenchus dipsaci*. Lucerne was sown immediately after treatment and a month later the seedlings on the treated plots appeared healthy although the stand was irregular, which was attributed to dry weather. The untreated plots bore only scattered plants which were yellow, dwarfed and swollen at ground level. Stem nematodes were found in them. Many of these plants recovered. The nematodes were inactive during dry weather but after rain they could again be found. M.T.F.

(139f) Soil from around the roots of stunted cotton plants contained 1,495 *Hoplolaimus coronatus* per pint as compared with 125 per pint from around healthy plants. All stages of the nematode were found in the roots; feeding on the roots was observed in the laboratory, resulting in brown discolouration at the feeding point. In an experiment, cotton seedlings growing in soil inoculated with *H. coronatus* were stunted and three out of ten failed to emerge as compared with ten healthy controls. This is the first record of this nematode as a parasite of cotton. *Helicotylenchus* sp., *Pratylenchus* sp. and *Meloidogyne* sp. were equally numerous in areas containing healthy plants as in others where the plants were stunted. M.T.F.

(139g) In inoculation tests with cotton in which *Meloidogyne incognita* var. *acrita*, *Tylenchorhynchus* sp., *Helicotylenchus* sp. and *Trichodorus* sp. were each tested alone, and in combination with *Fusarium oxysporum* f. *vasinfectum* (the wilt fungus) only the first nematode significantly increased the incidence of wilt in the cotton varieties tested, namely Deltapine 15 and Coker 100WR. All the nematodes fed and reproduced abundantly on the plants. M.T.F.

(139h) Dixie Bright 101, a tobacco resistant to black shank disease, became critically stunted in fields where *Tylenchorhynchus claytoni*, *Meloidogyne* sp. and *Pratylenchus* sp. were present. As a result of cross breeding, lines were produced which had resistance to black shank and tolerance to root-knot and meadow nematodes, and gave yields and quality better than Dixie Bright 101 on disease-free soil. M.T.F.

(139i) Three nematicides were applied in the row to tobacco plots infested with several plant-parasitic species of nematode. "Satisfactory" root-knot nematode control was given by the three treatments, viz., Dowfume W-85 (1,2-dibromomethane) at 0.65 ml. per ft., D-D mixture at 3.26 ml. per ft. and PN-20 (20% 1,2-dibromomethane in Phillips hydrocarbon mixture) at 2.44 ml. per ft. On coarse, sandy soils D-D was the best of the three and this was the most effective chemical against *Pratylenchus* spp. The other treatments were better than D-D against *Tylenchorhynchus claytoni* and they "virtually eliminated" *Helicotylenchus* sp. and *Xiphinema americanum*. M.T.F.

(139j) Nusbaum & Sasser applied Dowfume W-85 and D-D mixture both as liquids and impregnated on No. 3 grade vermiculite to plots infested with root-knot nematodes. In general slightly better control of root-knot, as indicated by root-knot indices of tobacco plants at the end of the growing season, was obtained from the vermiculite plots than from those to which the fumigant had been applied as a liquid. M.T.F.

(139k) Four chemicals were applied as drenches to a six-year-old plot of Seaside creeping bent-grass in which large numbers of six [unnamed] species of root-parasitic eelworms had been found. The drenches were applied to five replicated plots 25 feet square at the rate of 50 gallons per 100 sq. ft. Fourteen weeks later the nematode populations of all treated plots were significantly lower than those of untreated plots. The chemicals and rates of application were as follows: Heptachlor at 300 lb. per acre, N-244 at 600 lb. and 400 lb. per acre, V-C 1-13 at 500 lb. and 250 lb. per acre and R-I-26 at 192 lb. and 96 lb. per acre. The higher dosage of N-244 killed the turf. M.T.F.

140—Plant Disease Reporter.

- a. ALLISON, J. L., 1955.—“Nematodes and grassland farming.” [Abstract of paper presented at Symposium on Forage Crop Diseases and Grassland Farming, Louisville, Ky, February 7-9, 1955.] 39 (5), 343-344.
- b. WATSON, R. D., 1955.—“Galls similar to crown gall and nematode injury produced by 2,4-D.” 39 (5), 391-394.
- c. FEDER, W. A. & FELDMESSER, J., 1955.—“Progress report on studies on the reproduction of the burrowing nematode, *Radopholus similis* (Cobb) Thorne, on citrus seedlings growing in petri dishes.” 39 (5), 395-396.
- d. LEAR, B. & JACOB, F. C., 1955.—“Results of laboratory experiments with high-voltage, non-thermal electrical treatments for control of root-knot nematodes.” 39 (5), 397-399.
- e. MANZELLI, M. A., 1955.—“A residual organophosphorus nematocide.” 39 (5), 400-404.
- f. CHEO, P. C. & TARJAN, A. C., 1955.—“Use of anti-fermentative chemicals for maintaining cultures of *Panagrellus redivivus* for nematocide screening.” 39 (5), 405-406.
- g. BELL, F. H. & ALANDIA B., S., 1955.—“Golden nematode and other potato diseases in Bolivia.” 39 (5), 407-408.
- h. DALLIMORE, C. E., 1955.—“Methods of increasing the efficacy of soil fumigation in experimental fields.” 39 (6), 511-515.
- i. FENNE, S. B., 1955.—“Alfalfa disease survey in Virginia.” 39 (6), 520.
- j. COURTNEY, W. D., POLLEY, D. & MILLER, V. L., 1955.—“TAF, an improved fixative in nematode technique.” 39 (7), 570-571.
- k. FASSULIOTIS, G. & SPARROW, A. H., 1955.—“Preliminary report of X-ray studies on the golden nematode.” 39 (7), 572.
- l. NYLAND, G., 1955.—“Killing root knot nematodes in some stone fruit tree rootstocks.” 39 (7), 573-575.
- m. KLINKENBERG, C. H., 1955.—“Nematode diseases of strawberries in the Netherlands.” 39 (8), 603-606.
- n. AYCOCK, R., 1955.—“A comparison of two methods of row fumigation for control of root knot of cantaloupe in South Carolina.” 39 (8), 607-610.

(140a) Allison indicates briefly some nematode damage to forage legumes which has been noted in the southern U.S.A. The nematodes mentioned are *Pratylenchus* spp. associated with failure of spring-sown lucerne and red clover in Kentucky, *Heterodera trifolii* damaging seedling stands of Ladino and common white clover, *Ditylenchus* sp. causing serious damage to lucerne in Virginia and North Carolina, and *Meloidogyne arenaria*, *M. hapla*, *M. javanica*, *M. incognita* and *M. incognita* var. *acrita* attacking lucerne, Ladino, common white, red and crimson clovers, Korean, Kobe and Sericea lespedezas, big trefoil and birdsfoot trefoil. Ladino clover was most susceptible and none of the legumes showed any great resistance. M.T.F.

(140b) Watson finds that 2,4-D in 5-10 parts per million of irrigation water applied to the soil in which carrots, parsnips, beets and several members of the cabbage family were growing caused the formation of galls on the roots resembling those caused by nematodes. There were no symptoms in the leaves but in some cases stem galls resembling crown gall were produced at a distance from the point of contact with 2,4-D. M.T.F.

(140c) The authors describe the culture of the burrowing nematode, *Radopholus similis*, on the roots of Duncan grapefruit and Rough lemon seedlings growing on agar plates. On both plants lesions appeared 15 to 20 days after inoculation. M.T.F.

(140d) Lear & Jacob tested the effects of high voltage, low thermal electrical treatments on root-knot nematodes in small volumes of wet and of dry soil. Full details and a diagram of the electrical power supply are given. The soil was sandy loam with moisture equivalent of 12% and about six cubic inches were treated between copper plates 1.25 inches apart. Half the soil was treated damp, with a moisture content of 11%, the rest was dried to 5.9% moisture content before treatment. After treatment, tomato seedlings were grown for five weeks and counts then made of the galls on the roots. There were no apparent differences in the numbers of galls produced on plants grown in the variously treated soils. These small scale treatments were limited in severity by voltage breakdown in the soil (maximum voltage used was 12 kilovolts and breakdown was at about 13 kilovolts) and by rise in temperature (about 25°F. for wet and 21°F. for dry soil) and it is concluded that it is difficult to see how similar treatments could be nematocidal in the field, as has been reported from Southern Rhodesia. M.T.F.

(140e) On turfs showing yellowing and poor root growth of the grasses, associated with plant-parasitic nematodes, Manzelli has tested a nematocide, V-C 13 of which the active ingredient is *o*-2,4-dichlorophenyl *o*-diethyl phosphorothioate. This is a relatively non-volatile and non-phytotoxic substance. It was found most satisfactory when applied as a drench at rates of 125, 250 and 500 lb. per acre. Reductions in the numbers of nematodes and improvements in the growth of the grasses were particularly noticeable in cases where the numbers of nematodes were initially high. M.T.F.

(140f) Cheo & Tarjan have tested 21 substances as additions to the cooked oatmeal medium in which they culture *Panagrellus redivivus* in an attempt to find a substance which will reduce fermentation without inhibiting development of the nematodes. Nematodes ceased activity at pH values below 3.4 and above 8.5. The most satisfactory materials for slowing down the rate of increase in pH were Amberlite IR-120 and oxyquinoline benzoate, and these therefore increased the period during which conditions were favourable for nematode growth. M.T.F.

(140g) *Heterodera rostochiensis* has been found for the first time in Bolivia. It is widespread in the Lake Titicaca region at an altitude of 12,600 ft. to 13,000 ft., and in the Tunari range at 11,000 ft., 200 miles south-west of the lake. The widespread distribution substantiates the theory that this nematode is indigenous in the Andes. *Meloidogyne* sp. has also been found on potatoes in the same areas. M.T.F.

(140h) The nematodes which survive fumigation in the top two or three inches of soil can be eradicated in experimental fields if five or six days later this top layer is ploughed into the plough furrow ahead by a scraper blade attached to the tractor's cultivator toolbar. The soil can be sealed during fumigation by attaching a spike tooth harrow and chain drag to the tractor mounted plough. The contamination of plots already fumigated can be avoided by using equipment which can be raised at the end of the plots, by placing definite borders, e.g. rows of grass between plots, by fumigating headlands and border rows and, between plots, by using a steam cleaner to remove all soil from implements. Rubber overshoes and a rubber apron should be worn when transferring fumigants and clothing on which fumigant has been spilled should be removed. Soap and water should always be available and the hands thoroughly washed immediately after handling fumigants. R.T.L.

(140i) *Ditylenchus dipsaci* is reported on lucerne in Halifax, Pittsylvania and Prince Edward counties in Virginia. This is the first record of the occurrence of stem nematode in Halifax County. S.W.

(140j) Courtney *et al.* have developed a new fixative for nematodes; it contains 2 c.c. triethanolamine, 7 c.c. of 40% commercial formaldehyde solution and 91 c.c. distilled water. The pH is 9.1 when the fixative is first made, dropping to 8.5 in about two years. The triethanolamine is a viscid, hygroscopic organic base; if the fixative is allowed to dry the triethanolamine remains and addition of fresh fixative will restore the nematodes to good condition. It is claimed that nematodes may be put direct into the cold fixative or first relaxed in warm water. After fixation, processing is by the usual technique for permanent mounts.

M.T.F.

(140k) Potato root eelworm cysts removed from soil were irradiated at room temperature at the rate of 1,000 roentgens per minute and separate batches were given total doses of 2,500, 5,000, 10,000, 20,000, 40,000 and 80,000 roentgens. Larvae were hatched from the cysts and sprinkled on to the roots of potato and tomato plants growing in the green-house. After 60 days, the new cysts were washed from the soil and roots. Cysts from the two lowest treatments were normal and contained viable embryonated eggs. Cysts developed from eggs treated with 10,000 r appeared normal but half the contained eggs were brown and dead. Cysts formed after treatment with 20,000 and 40,000 r looked normal but the eggs in the former were brown and dead and the cysts of the latter treatment were empty. The 20,000 r treatment also inhibits the sprouting of potato tubers.

M.T.F.

(140l) In a preliminary experiment, Nyland subjected *Prunus mahaleb* seedlings to warm water treatments for the control of root-knot nematodes. At 118°F. for 20 and 30 minutes the tree survival rates were 64% and 72% respectively; at 120°F. and 122°F., both for 15 minutes, 52% survived but 30 minutes at 120°F. and 20 minutes at 122°F. were lethal. At 124°F. for 10 minutes 60% of the trees survived. In all cases the nematodes were killed. Tests with two-year-old trees of the same species and of Lovell peach treated at 118°F. for 30 minutes, 120°F. for 15 minutes, 122°F. for 10 minutes and 124°F. for 5-10 minutes gave 100% survival when the trees were dug and stored for six weeks before treatment but poor survival if stored for only one week. The condition of the trees before digging, and care in avoiding drying of the roots during treatment are important factors in survival. Myrobalan seedlings behaved much as *P. mahaleb* but bitter almond were very erratic.

M.T.F.

(140m) The main part of Klinkenberg's paper given at a Strawberry Conference in Beltsville, Maryland, is a survey of several years' work on black root rot disease which has been serious in strawberries in parts of the Netherlands for a number of years. It was shown that the disease occurred in the presence of nematodes but not in their absence. *Pratylenchus penetrans* was found in strawberries but there is no proof that other species of this genus which have been found in the Netherlands can attack strawberries there. In preliminary field experiments, D-D mixture and chloropicrin gave satisfactory results but D-D proved phytotoxic, preventing the taking of a late crop from between the strawberry rows, while chloropicrin is difficult to apply and expensive. A more detailed experiment has been laid out, testing two concentrations of D-D (65 c.c. per square metre and 32.5 c.c. per square metre) and formalin (300 c.c. per square metre and 150 c.c. per square metre). The experimental field was sampled in August, treated with D-D in September, sampled in October and December and the formalin applied late in December. All the plots were again sampled in March and strawberries were planted in April with carrots between the rows, as a second crop. Results so far show that D-D eliminated most of the nematodes and formalin had no effect on their numbers. The experiment will be carried on for three or four years. The bud and leaf nematodes, *Aphelenchoides fragariae* and *A. ritzema-bosi*, and the stem nematode, *Ditylenchus dipsaci*, are also found in the Netherlands but can be kept in check by roguing.

M.T.F.

(140n) Aycock used Dowfume W-40 and Dowfume W-85 (ethylene dibromide), D-D mixture and Nemagon (1-3 dichloro, 2-bromopropane) applied either in one stream along the row or in two streams 12 inches apart, on a Norfolk sand infested with root-knot

nematodes. The D-D and Dowfume W-40 were applied at 3.6 c.c. per linear foot, the Dowfume W-85 and Nemagon at 1.2 c.c. per linear foot. Cantaloupe seed was sown three weeks later. The stand was not affected by D-D and Dowfume W-85 but was reduced where two streams of W-40 were applied and severely reduced by all applications of Nemagon. Mean yields from plots treated with W-85, W-40 and D-D were more than double those from the controls. The single-stream plots outyielded the double-stream ones but the difference was significant only for the D-D plots. A comparison of root-knot indices showed less root-knot in the two-stream W-85 and D-D plots than in the single-stream plots. Dowfume W-40 gave better control (mean root-knot index 23.3) than W-85 (45.5) or D-D (52.6) regardless of the method of application. Nemagon gave the best control (18.9) and control plots had a mean root-knot index of 81.4.

M.T.F.

141—Poultry Science.

- a. REID, W. M., 1955.—“Comparative resistance of imported standard breeds and native Egyptian strains of poultry to *Ascaridia galli*.” 34 (1), 30–35.

(141a) Reid has demonstrated experimentally that the native breeds of poultry in Egypt have no greater resistance to *Ascaridia galli* than imported Barred Plymouth Rock or Rhode Island Red breeds under Egyptian farm conditions. Control measures in Egypt need not differ radically from those followed in other countries.

R.T.L.

142—Proceedings of the Alumni Association, Malaya.

- a. KHAIRA, B. S., 1955.—“Hydatid cyst of the liver.” 8 (3), 219–220.

143—Proceedings of the Helminthological Society of Washington.

- a. HIRSCHMANN, H., 1955.—“*Radopholus gracilis* (de Man, 1880) n.comb. (Synonym—*Tylenchorhynchus gracilis* (de Man, 1880) Filipjev, 1936).” 22 (2), 57–63.
 b. COIL, W. H., 1955.—“*Cercaria wabashensis* sp.nov., a new macrocercous cercaria (Gorgoderinae) from western Indiana.” 22 (2), 64–66.
 c. COIL, W. H., 1955.—“*Parvitaenia cochlearii* sp.nov. (Cestoda: Dilepididae) a new tapeworm parasitic in the boat-billed heron, *Cochlearius cochlearius*.” 22 (2), 66–68.

(143a) Specimens of *Tylenchus gracilis* from different localities in Germany conform with de Man's original description. In his re-drawing of one of de Man's original drawings, Goodey showed a definite oesophageal bulb which was absent in the original. On the basis of this, Filipjev included *T. gracilis* in the genus *Tylenchorhynchus*. But the basal portion of the oesophagus is lobed and extends back over the intestine, the paired opposed outstretched gonads and the form of the head and tail, all indicate that *T. gracilis* belongs to the genus *Radopholus* to which it is now transferred as *R. gracilis* n.comb. *R. gigas* is considered to be a synonym of *R. gracilis*. *R. oryzae* is very similar to *R. gracilis* showing only a slight difference in size. Whether it is a distinct species remains to be determined. The habitats and distribution of *R. gracilis* are cited from various authors.

R.T.L.

(143b) *Cercaria wabashensis* n.sp. is one of four macrocercariae taken from the gills of *Sphaerium (Musculium) transversum* found in the Wabash River, Tippecanoe County, Indiana. Like that of *C. macrocerca* Vickers, 1940, its tail possesses minute spines and invaginates rhythmically but it can be differentiated from the other macrocercariae [not yet described] by the number of penetration glands which vary from five to eight and the shape of the stylet which is illustrated but not described. The body is completely housed in the large tail which is swollen proximally into an almost spherical bulb. The cercariae develop in sporocysts.

R.T.L.

(143c) *Parvitaenia cochlearii* n.sp. was collected from the boat-billed heron, *Cochlearius cochlearius*, in Oaxaca, Mexico. It differs from *P. ardeolae*, the only other species of the genus, by possessing an armed cirrus, a vaginal sphincter, rostellar hooks of different shape and a large strobila which measures from 1.6 mm. when contracted to 2.68 mm. when relaxed.

R.T.L.

143—Proceedings of the Helminthological Society of Washington (cont.)

- d. ANDERSON, R. C., 1955.—"Note on the morphology and systematic status of the genus *Molinema* Freitas and Lent, 1939 (Nematoda: Filarioidea)." 22 (2), 69-70.
- e. LORDELLO, L. G. E., 1955.—"On the morphology of *Proleptonchus aestivus* n.gen., n.sp. and *Dorylaimus lourdesae* n.sp., two new soil nematodes from Brazil." 22 (2), 71-75.
- f. HANSON, M. L., 1955.—"Some digenetic trematodes of plectognath fishes of Hawaii." 22 (2), 75-87.
- g. CAVENESS, F. E. & JENSEN, H. J., 1955.—"Modification of the centrifugal-flotation technique for the isolation and concentration of nematodes and their eggs from soil and plant tissue." 22 (2), 87-89.
- h. VOGEL, M., 1955.—"*Hymenolepis pulchra* n.sp., a cestode from the shrew *Sorex trowbridgei* in California." 22 (2), 90-92.
- i. HARTLEY, C. F., 1955.—"Rearing simuliids in the laboratory from eggs to adults." 22 (2), 93-95.

(143d) By accepting the extended definition recently given to the genus *Dipetalonema* by Chabaud [for abstract see Helm. Abs., 21, No. 58f], the three species *Dipetalonema diacantha*, *D. travassosi* and *Filaria bifida* for which Freitas & Lent created the genus *Molinema* in 1939 can now be placed in *Dipetalonema*. As a result *Filaria bifida* now becomes *D. bifida* (Molin, 1858) n.comb. R.T.L.

(143e) Two female leptonchid nematodes found in soil samples in the State of São Paulo are described and named *Proleptonchus aestivus* n.g., n.sp. The new genus closely resembles *Leptonchus* but the spear extension is indiscernible, it is prodelphic, the basal bulb is clearly set off from the anterior portion of the oesophagus and the guiding ring is a strongly cuticularized structure, not a truncate cone. *Dorylaimus lourdesae* n.sp. was collected from soil around roots of forest trees near Piracicaba, State of São Paulo, and a single female from soil surrounding potato tubers at Sapecado. It is an amphidelphic, long-tailed *Dorylaimus*. The spear guiding ring is broad with transverse striations, with an additional structure functioning as a guiding ring preceding it. The oviduct wall has remarkable annulations. There is a single pair of lateral papillae on the rectal region. Additional characters are given to differentiate this new species from *D. proximus* and *D. tenellus*. R.T.L.

(143f) Hanson describes in detail and illustrates two new genera and six new species of digenetic trematodes from fish in Hawaii. *Hysteroгония balistis* n.g., n.sp. from *Balistes capistratus* is most closely related to *Eurycreadium* but differs from it and from other Opecoelidae in several characters, notably the extreme posterior position of the gonads. *Paratetrochetus aluterae* n.g., n.sp. from *Alutera scripta* is similar to *Tetrochetus* but has an anterior extension of the pharynx. The other four new species are *Cleptodiscus bulbosus* n.sp. and *Lepocreadium incisum* n.sp. from *Melichthys buniwa*, *Pseudopecoelus brevivesiculatus* n.sp. from *Cantherines pardalis* and *M. buniwa*, and *Discogasteroides hawaiiensis* n.sp. from *Ostracion sebae*. These are all differentiated from the species most closely related to them by a number of detailed anatomical characters. S.W.

(143g) A new technique which is a modification of the centrifugal flotation technique is described and compared with gravity screening, the Baermann funnel and normal centrifugal flotation methods. It is recommended where the entire nematode population is to be determined from small aliquots of soil or plant material but current methods should be used where large numbers of nematodes are desired for permanent collections or for general survey information. R.T.L.

(143h) *Hymenolepis pulchra* n.sp., found in *Sorex trowbridgei* and *S. pacificus* in California, possesses a relatively small spherical uterus resembling a uterine capsule. This type of uterus was described by Spasski in 1947 in a cestode from a shrew in Russia which he placed in the genus *Neoskrjabinolepis*. The scolex is very large in relation to the strobila, the rostellum is unarmed and the testes are arranged in a straight line. R.T.L.

143—Proceedings of the Helminthological Society of Washington (cont.)

- j. RAUSCH, R., 1955.—“Unusual pathogenicity of *Diphyllbothrium* sp. in a black bear.” 22 (2), 95-97.
- k. HERMAN, C. M., 1955.—“*Macracanthorhynchus ingens* from raccoons in Maryland.” 22 (2), 105.
- l. WIESER, W., 1955.—“The attractiveness of plants to larvae of root-knot nematodes. I. The effect of tomato seedlings and excised roots on *Meloidogyne hapla* Chitwood.” 22 (2), 106-112.
- m. COIL, W. H., 1955.—“*Oligorchis cyanocittii* sp. nov., a hymenolepid cestode parasitic in the steller jay, *Cyanocitta stelleri* (Corvidae).” 22 (2), 112-114.
- n. HIRSCHMANN, H. & SASSER, J. N., 1955.—“On the occurrence of an intersexual form in *Ditylenchus trififormis*, n.sp. (Nematoda, Tylenchida).” 22 (2), 115-123.
- o. RUBIN, R. & WEBER, T. B., 1955.—“The effect of immune serum on *Dictyocaulus viviparus* in calves. Preliminary report.” 22 (2), 124-129.
- p. HERMAN, C. M., 1955.—“Removal of tapeworms from a live dove.” 22 (2), 129.

(143j) Rausch describes the pathological results of the penetration into and occlusion of the pancreatic duct of a black bear by the strobila of *Diphyllbothrium* sp. R.T.L.

(143k) Although there are few records of the occurrence of *Macracanthorhynchus ingens* in North America, it is fairly common in raccoons in Maryland. R.T.L.

(143l) Germinating tomato seedlings were only attractive to the larvae of *Meloidogyne hapla* when growing and alive. The degree of attractiveness is roughly proportional to the rate of growth. The apical 2 mm. of excised root tips are repellent while the succeeding 6 mm. are attractive. The piliferous zone is neutral or slightly repellent. The attractive substance in excised roots remains active for at least 24 hours in water. The larvae react to the excretions of even 1 mm. of root. R.T.L.

(143m) *Oligorchis cyanocittii* n.sp. [also referred to as “cyanocitti”] from *Cyanocitta stelleri* in Chiapas, Mexico, is readily separated from *O. toxometra* (which also has 10 rostellar hooks and four testes) by the length of the rostellar hooks which in *O. cyanocittii* measure 0.025-0.028 mm. and in *O. toxometra* 0.037-0.040 mm. R.T.L.

(143n) After reviewing the literature dealing with intersexes in nematodes, Hirschmann & Sasser describe and figure *Ditylenchus trififormis* n.sp. Although taken from soil in a gladiolus field in New Hanover County, North Carolina, experiments indicated that the nematode does not appear to feed or reproduce on gladiolus. [The characters which differentiate *D. trififormis* from other species are not specifically indicated.] The intersexes found resembled the female in body shape and had normal female characters combined with secondary male characters. All the intersexes had spermatozoa in their uteri but no fertilized eggs were observed. The spicules and gubernaculum were slightly shorter than in male specimens. The new species was successfully propagated on fungus cultures but no intersexes were recovered. The factors responsible for their occurrence in nematodes are unknown. R.T.L.

(143o) Rubin & Weber tested various dosages of immune serum, obtained from animals immunized against *Dictyocaulus viviparus*, as a protection against a challenging dose of 50,000 infective larvae. This number of larvae is known to be consistently fatal to non-immunized calves. Six calves were used: five were given immune serum intravenously at dose rates of from 0.1 ml. to 5.0 ml. per lb. body-weight; the sixth received, as the control, normal serum at the rate of 5.0 ml. per lb. Two calves which received the highest dose rate of immune serum survived. The other three immunized calves died on the 33rd, 37th and 48th day after the challenging infection but the control died on the 23rd day. This and a comparison of the worm burdens and percentages of large and small worms recovered from the calves which died, suggest that even the lower doses of immune serum had some effect and that this effect is related to the amount of immune serum given. S.W.

(143p) Herman reports that, by careful steady traction with a pair of forceps, he removed *per anum* from a mourning dove (*Zenaidura macroura carolinensis*) four complete strobilae of *Aporina delafondii* with heads attached. R.T.L.

143—Proceedings of the Helminthological Society of Washington (cont.)

- q. TURNER, J. H., 1955.—“Preliminary report of experimental strongyloidiasis in lambs.” **22** (2), 132–133.

(143q) This is a preliminary note on the results of an experiment to determine more precisely the pathogenic potentiality of *Strongyloides papillosus* in lambs which were free of helminths prior to the experiment. The course and progressive effects were followed during the prepatent and patent periods or until death. Four lambs about two months old and averaging 21 lb. in weight received a cutaneous application of 25,000, 50,000, 75,000 and 100,000 larvae respectively. Three lambs ten weeks old and averaging 25 lb. in weight received 200,000, 300,000, and 500,000 larvae respectively and one lamb three months old weighing 32 lb. received one million larvae. The five lambs which received 100,000 or over died 13 to 41 days later. The two lambs infected by 500,000 or one million larvae died on the 13th day. The clinical symptoms were anorexia, retarded weight gains or loss of weight, diuresis, lassitude, slight to moderate anaemia and mushy to fluid stools several days before death. In those that survived the symptoms were less severe. The worms recovered at post-mortem varied from 8.9% to 92% of the original number of larvae used. In those dying from strongyloidiasis, the duodenal mucosa was severely eroded and the intestine contained a fluid catarrhal exudate. Profuse petechial and ecchymotic haemorrhages occurred in the lungs during the prepatent period three to five days after exposure to from one million to one and a half million larvae.

R.T.L.

144—Progresso Veterinario. Turin.

- a. PANEBIANCO, F., 1955.—“Sulla tetrameriosi del pollo. Prime osservazioni su di un focolaio della malattia in Sicilia.” **10** (2), 63–66, 68–71. [English & French summaries p. 71.]
 b. PESCE, P. A., 1955.—“La diagnosi di verminosi con la reazione di Jefimow nei vitelli.” **10** (4), 150.

(144a) Panebianco reports anaemia and loss of weight caused by *Tetrameres fissispina* in the glandular stomach in chickens at Ganzirri, near Messina in Italy. The species is redescribed and the lesions and histopathology are illustrated and reviewed in detail. M.MCK.

(144b) Pesce quotes from his book “Il mio cane” details of a urine test using Jefimow’s reaction to diagnose the presence of ascarids, oxyurids or cestodes in dogs. When 10 c.c. of fresh urine are brought to the boil and 10 drops of 3% silver nitrate are added, normal urine turns milky and produces a white precipitate but urine from an infected animal becomes greyish and throws down a dark precipitate, tending to become black according to the degree of infestation. The test could be applied to calves and lambs but probably needs further verification.

M.MCK.

145—Publicaciones del Instituto de Biología Aplicada. Barcelona.

- a. GADEA, E., 1955.—“Nota sobre algunos nematodos muscícolas de la Sierra de la Demanda.” **19**, 5–12. [English summary p. 12.]

(145a) Gadea identified *Dorylaimus carteri*, *D. gracilis*, *Plectus cirratus*, *P. parvus*, *Tylenchus filiformis*, *T. davainei*, *Teratocephalus terrestris*, *Wilsonema auriculatum*, *Ditylenchus intermedius*, *Mononchus (P.) muscorum*, *Rhabditis papillosa* and *Monhystera filiformis* from five samples of moss and earth. These were taken mainly between 1,000 m. and 1,500 m. in semi-xerophytic woodland in Mansilla, Sierra de la Demanda. The occurrence of the worms is analysed according to environment and abundance. *Plectus cirratus* was the commonest species and *Rhabditis papillosa*, which is figured and briefly described, was recorded for the first time in Spain.

M.MCK.

146—Quarterly Journal of the Florida Academy of Sciences.

- a. HARGIS, Jr., W. J., 1955.—"Monogenetic trematodes of Gulf of Mexico fishes. Part III. The superfamily Gyrodactyloidea." 18 (1), 33-47.

(146a) In this third paper on the Monogenea of fish in the Gulf of Mexico, Hargis continues his study of the Gyrodactyloidea. He rejects the subfamily Rhamnocercinae and transfers *Rhamnocercus* and *Rhabdosynochus*, both emended, to the Diplectaninae which is also emended. He discusses the status of *Tetrancistrum*, which needs redefinition, and of *Neodiplectanum* which is little different from *Diplectanum*. Three new species are described and illustrated. *Pseudohaliotrema mugilinus* n.sp. from the gills of *Mugil cephalus* is differentiated from other species of the genus by the median ornamentation of the ventral bar, the shape of the cirrus which is long and thin and the shape of the anchor roots. *Diplectanum bilobatus* n.sp. from the gills of *Cynoscion nebulosus* is most closely related to *D. girellae* but differs in that the base of the cirrus is bifurcate and the ventral anchors have only one prominent root, and in the shape of the bars. *Rhamnocercus bairdiella* n.sp. from the gills of *Bairdiella chrysura* differs from *R. rhamnocercus* in the smaller size of the body and hard parts, the shape of the anchors, the spiral cirrus and the shape and number of spines on the dorsal, ventral and lateral plaques. s.w.

147—Quarterly Journal of Microscopical Science.

- a. BRADBURY, S., 1955.—"A cytological study of the metabolism of iron in the leech, *Glossiphonia complanata*." 96 (2), 169-172.

148—Research Bulletin of the Hokkaido National Agricultural Experiment Station.

- a. ICHINOHE, M., 1955.—[A study on the population of the soy bean nematodes (*Heterodera glycines*). I. An observation on the relation between the crop damage and the female infestation.] No. 68, pp. 67-70. [In Japanese: English summary p. 70.]

(148a) Using the number of pods per plant as a criterion of crop damage in soya beans, Ichinohe showed that in general there were fewer female *Heterodera glycines* on heavily damaged and on lightly damaged plants than on soya bean showing medium damage. He gives a table showing the pods per plant, the seed yield, the height of plants, the number of females per plant and the frequency in different categories of plant damage. J.B.G.

149—Research Bulletin of the Panjab University, Hoshiarpur.

- a. DHINGRA, O. P., 1955.—"Spermatogenesis of a digenetic trematode, *Cotylophoron elongatum*." No. 64 (Zoology), pp. 1-10.
b. DHINGRA, O. P., 1955.—"Spermatogenesis of a digenetic trematode, *Gastrothylax crumenifer*." No. 65 (Zoology), pp. 11-17.
c. DHINGRA, O. P., 1955.—"Gametogenesis, fertilization and cleavage in *Asymphyllodora* sp." No. 66 (Zoology), pp. 19-29.

(149a) Dhingra describes in detail and illustrates all stages of spermatogenesis in *Cotylophoron elongatum*. Mitochondria are present until late spermateleosis when they are cast off with the cytoplasm, but Golgi material was not observed. The sequence of divisions in *C. elongatum* resembles that in other forms but the division of the cytoplasm lags behind the nuclear divisions and reorganization of daughter nuclei. The spermatozoon consists of a nucleus, a centrosome and a flagellum and is not a purely nuclear structure. Centrosomes are visible at both meiotic divisions and a centrosomal granule from which the flagellum arises may be seen at the base of the spermatid. The haploid chromosome number is 8. s.w.

(149b) During spermatogenesis in *Gastrothylax crumenifer* Dhingra observed degenerating spermatogonia, some unidentified nuclei and oocytes in the testes. Mitochondria are present in the earlier stages of spermatogenesis but remain in the residual cytoplasm and do not form any component of the spermatozoa. A centrosomal granule from which the flagellum arises is present in the spermatid and the spermatozoon consists of an elongated nucleus, a centrosome and a flagellum. The haploid chromosome number is 7. s.w.

(149c) In *Asymphylogadora* sp. spermatogenesis follows the same general plan as reported for other digenetic trematodes but the spermatozoon is globular, not thread-like or spindle-shaped as found in other trematodes. During oogenesis reserve food material appears in the primary oocyte while it is within the ovary but disappears when the oocyte leaves the ovary. Two polar bodies are extruded with a little cytoplasm and the first enlarges and divides. The pronuclei enter into a resting stage before fusion and the fusion nucleus possesses two nucleoli. A centrosomal granule was observed when the two pronuclei were lying close together. The first cleavage division is unequal resulting in the formation of a small propagatory cell, which remains undivided, and a larger cell which continues to divide. The haploid chromosome number is 9. S.W.

150—Revista Brasileira de Biologia.

- a. WINTER, H. A., 1955.—“*Capsala caballeroi* sp.n., parásito de *Sarda orientalis*, con un catálogo de los tremátodos monogéneos de los peces del Océano Pacífico de las Américas.” 15 (1), 9–32. [English summary p. 29.]
- b. LORDELLO, L. G. E., 1955.—“Three new soil nematodes from Piracicaba (State of S. Paulo), with a key to the species of the genus *Aporcelaimus* (Dorylaimidae).” 15 (2), 211–218.

(150a) *Capsala caballeroi* n.sp. is described from the gills of *Sarda orientalis* from the Pacific Ocean at Acapulco, Guerrero, Mexico. The new species is distinguished from all known species of the genus *Capsala* particularly by the morphology of the opisthaptor, which is an irregular and transversely elongate ellipse in contour, and possesses a discontinuous marginal membrane. A catalogue and data on host and geographical distribution of 62 species in 14 families of the trematode order Monogenea from 62 species in 29 fish families from the Pacific Ocean of the Americas are appended. *Udonella ophiodontis* (Kay, 1945) (syn. *Calinella ophiodontis* Kay, 1945) is noted as a new combination. H.A.W.

(150b) Lordello describes and briefly figures three new species, *Aporcelaimus ferrugineus* n.sp., *Dorylaimus piracicabensis* n.sp. and *D. cavalcantii* n.sp. He proposes *Aporcelaimus parvus* nom.nov. for *A. minor* Altherr, 1954 nec *A. minor* Loos, 1945. *A. ferrugineus* differs from *A. parvus* and *A. nivalis* Altherr, 1952 in the length of the neck and tail, the shape of the tail and the structure of the cuticle. *D. piracicabensis* differs from *D. granuliferus* Cobb, 1893 in the structure of the lips, amphids and tail and in size, and from *D. productus* Thorne & Swanger, 1936 in size, extent of the ovaries and structure of the amphids. *D. cavalcantii* is one of the few monodelphic *Dorylaimus* and has a posterior ovary; from *D. laevicapitatus* Cobb, 1936 and *D. lessus* Thorne, 1939 it differs in measurements and in the structure of the head, guiding ring and tail. J.B.G.

151—Revista Ibérica de Parasitología.

- a. SCHUURMANS STEKHOVEN, Jr., J. H., 1955.—“Conceptos parasitológicos.” 15 (3), 193–241.
- b. GONZÁLEZ CASTRO, J. & FERNÁNDEZ AMELA, T., 1955.—“Nuevas aportaciones al estudio de la prueba de Suessenguth y Kline.” 15 (3), 243–257. [English summary p. 256.]

(151a) In three lectures delivered at the Medical School of the University of Buenos Aires, Schuurmans Stekhoven jr. discusses different aspects of parasitism with detailed references to selected examples. M.MCK.

(151b) The Suessenguth & Kline test was applied to 33 people in Granada who had various illnesses but no previous history of trichinosis. Most of them carried intestinal helminths. Four of the tests were positive and in two of these cases no known helminths were present. Twelve others from Jaén suffering from trichinosis were subjected to the test between 41 and 54 days after the probable date of infection and all yielded positive results, eight showing titres of over 1:8. M.MCK.

152—Rivista di Parassitologia.

- a. RICCI, M. & CORBO, S., 1955.—“Sull'azione dell'idrato di piperazina verso *Enterobius vermicularis*.” 16 (2), 73–82. [English summary pp. 80–81.]
- b. AGOSTINUCCI, G., 1955.—“Contributo alla casistica delle infestazioni da *Dipylidium caninum* nell'uomo in Italia.” 16 (3), 206.

(152a) One hundred and seventy-five children aged from two to twelve years who were positive for *Enterobius* were given about 60 mg. per kg. body-weight of piperazine hydrate daily, in two or three doses, in a 20% solution of raspberry syrup. Treatment for 14 or 21 days consecutively was generally more efficient than for two weeks separated by a week's rest. Of the 140 who were subsequently observed 95.71% were cured and the *Ascaris* present in four of the cases were eliminated. M.MCK.

153—Sad i Ogorod. Moscow.

- a. VASILKOVA, A. K., 1955.—[Combating the potato stem nematode.] Year 1955, No. 4, pp. 39–40. [In Russian.]

(153a) Of five chemicals tested against *Ditylenchus* in potatoes only formalin completely removed the infection. The author recommends that, before storing or planting, potatoes should be dipped in a solution of 1 kg. of pure 40% formalin in 200 litres of water for five minutes, left in a heap covered with a formalin-wetted cloth for two hours and then allowed to dry in the shade. 50 kg. of potatoes require 30 litres of the solution. G.I.P.

154—Schweizer Archiv für Tierheilkunde.

- a. FANKHAUSER, R., 1955.—“*Coenurus cerebralis* beim Rind.” 97 (1), 16–30. [English, French & Italian summaries pp. 29–30.]

(154a) Fankhauser gives clinical, pathological and histological details of a case of *Coenurus cerebralis* in a two-year-old heifer in the Stockhorn region of the Swiss Alps. As no other instance has been recorded in Switzerland during the past ten years, he infers that wild animals maintain the infection. A translation is given of a portion of Wepfer's “Observationes anatomicae”, Amsterdam, 1681, containing an account of the presence of similar cysts in three Swiss cattle and the surgical procedure followed by the herdsmen at that time. M.MCK.

155—Scottish Agriculture.

- a. WILSON, A. L., 1955.—“Husk, hoose or parasitic bronchitis.” 35 (1), 51–53.
- b. WATT, J. A. A., 1955.—“Summer dosing of lambs.” 35 (1), 53–54.

156—South African Medical Journal.

- a. ANNECKE, S., PITCHFORD, R. J. & JACOBS, A. J., 1955.—“Some further observations on bilharziasis in the Transvaal.” 29 (14), 314–323.

(156a) A picture of the schistosomiasis problem among non-Europeans in the northern Transvaal was gained from over 6,000 faecal and urine examinations and by the study of living conditions and the extent to which they precipitate infection. Extraordinarily high incidences of *Schistosoma mansoni* and *S. haematobium* were noted. In the European farming areas the incidence reached almost 70% for each species in the farms offering no protection from the open streams and irrigation canals which are the only source of water. These figures, based on one urine or faecal sample per person, sedimented without centrifuging, suggest that the unprotected farming conditions cause complete saturation with the two types of disease. Continuous reinfection beginning in infancy is the rule (*S. haematobium* was found in a five-month-old baby and *S. mansoni* in a seven-month-old baby). Water that was pumped to supply dams above ground level, or fast-flowing rivers etc. offered a degree of accidental protection to some farms. Here incidences were 49.5% for *S. haematobium* [the table gives 50.3%] and 29.3% for *S. mansoni*. In the native reserves 65.8% had *S. haematobium* and 33.4% *S. mansoni*. The absence of irrigation and the more scattered population probably account

for the lower figure for *S. mansoni*. Over 200 patients were treated, unsuccessfully, with nilodin or miracil-D. Examination of several thousand adult snails for mammalian-type cercariae showed that the infection rate of *Biomphalaria* (the presumed vector for *S. mansoni*) over the whole area varied from 4.9% in April to 0.5% in August. That of *Physopsis* (the presumed vector for *S. haematobium*) varied from 13.6% in September to 0% in December. *Bulinus* (*Bulinus*) *forskali* and *Limnaea natalensis* were not found infected. The statistics for snail infection are analysed according to area and month of the year and those of individuals according to age and environment. As control measures Annecke *et al.* recommend simultaneous attack on the vector and mass treatment of children combined with sanitary measures and cementing or covering-in of canals. It is realized that in the native reserve areas this will be very difficult. M.MCK.

157—Sovetskaya Meditsina.

- a. TURCHINS, M. E., 1955.—[The influence on the course of dysentery of an accompanying helminthic infestation.] 19 (1), 32–36. [In Russian.]

(157a) Observations on 692 patients with acute and chronic dysentery, 59% of whom were infected with helminths (mainly ascarids and Enterobius), showed that worm infections aggravate dysenteric symptoms, reduce the effect of the cure and delay recovery. In acute cases anthelmintic treatment should be carried out before treatment of the dysentery, soon after the acute symptoms subside. Generally patients withstand anthelmintic treatment well. Dysentery bacteria were absent from all worm-free patients on the 18th day and from all those successfully freed of worms on the 21st day but were absent from only 59% of the worm-infected patients. G.I.P.

158—Station Bulletin. Oregon Agricultural Experiment Station.

- a. HORNER, C. E., 1955.—“Control peppermint diseases.” No. 547, 14 pp.

(158a) In Oregon, peppermint plants are attacked by *Meloidogyne hapla*, *Paratylenchus macrophallus* and *Longidorus sylphus*. Of these *L. sylphus* is the most serious. Root rots of peppermint are caused by at least five different fungal organisms which enter through wounds caused by nematodes, insects etc. Infected plants are stunted and reddish in colour and the leaves have a bunchy appearance. Roots damaged by nematodes are soon invaded by root rot fungi causing them to darken and die. Many species of plants were tested for resistance to *Longidorus*. Alfalfa, Austrian field pea, common rye grass, tall fescue, common vetch, hairy vetch and sweet corn proved resistant. Barley beans, garden peas, birdsfoot trefoil, Ladino clover and subclover were moderately resistant while peppermint, spearmint, red beets, tomato, crimson clover and red clover were susceptible. The planting of resistant crops on disease infested soil is the easiest and most practical method of control. R.T.L.

159—Tidsskrift for den Norske Laegeforening.

- a. STEEN, J., 1955.—“Oxyuriasis behandlet med piperazin-adipat.” 75 (1), 16. [English summary p. 16.]

(159a) Steen has treated a series of 30 cases of enterobiasis in children with piperazine adipate. The dosage for children of six years and over was six tablets of 0.3 gm. per day, and for children under six was one tablet daily per year of age. Treatment was continued for one week and repeated after a week's interval. Twenty-six of the 30 children were negative for ova three weeks after treatment (when examinations ceased). There were no complications or toxic effects. A.E.F.

160—Tidsskrift for Planteavl.

- a. MYGIND, H., 1955.—“Kartoffelälens forekomst i Danmark. Fortsatte undersøgelser 1953.” 58 (4), 722-728. [English summary p. 728.]

(160a) During a survey in 1953 in Denmark, 1,265 soil samples were taken from areas where seed potatoes are grown and of these four contained cysts of *Heterodera rostochiensis*. A further 3,955 samples from potato gardens and fields showed that one estate in the north-west was heavily infested, two parishes were slightly infested and eight parishes free. 180 samples were taken in an area exporting plant material from nurseries and sugar-beet growers and three samples from the latter contained cysts. Among 181 tree and shrub nurseries two samples from two different places, out of a total of 1,891 samples, were infected. In the town and neighbourhood of Ribe, which is not an area growing seed potatoes, 94 localities were more or less heavily infected; a map of the town and a map of its surroundings show the distribution of 1,200 soil samples taken there. *H. rostochiensis* is prevalent in certain private gardens and allotments in Denmark and this survey confirms the findings of similar investigations made in 1951 and 1952. M.MCK.

161—Tierärztliche Umschau.

- a. MENDHEIM, H., 1955.—“Über *Oxyuris suis* nebst einigen Bemerkungen über die Parasitenfauna des Schweines und die Frage der Wirtsspezifität.” 10 (1), 14.
 b. BOCH, J., 1955.—“Die Verbreitung von Wurmparasiten bei Rindern auf Bergweiden.” 10 (2), 51-53.
 c. AKMAN, S., HOLZ, J. & MIMIOGLU, M., 1955.—“Die Wirkung von Petroleum auf Rund- und Bandwürmer des Hundes.” 10 (3), 83-85.
 d. SAUER, B., 1955.—“Das neue Zeiss-Winkel Glühlampentrichinoskop III.” 10 (4), 142-144.

(161a) The “*Oxyuris suis*”, described by Haase in *Berl. tierärztl. Wschr.*, 1906, 38, 695-696, from the large intestine of pigs is actually the whipworm *Trichuris trichiura* which occurs in pigs, man and monkeys. Haase mistook the flagellum-like anterior portion of the body for the tail [an error originally made by Roederer in 1761 which led him to give the misleading name *Trichuris* to the parasite]. That the forms found in various hosts are biologically distinct remains to be proved. The solution of this problem has a practical bearing on prophylaxis. R.T.L.

(161b) Shortly after cattle were driven on to summer pastures on Alps 850-1,670 metres high, their helminth infections, as shown by microscopical examination of the faeces, were mainly *Haemonchus* or a mixture of *Ostertagia*, *Cooperia*, *Trichostrongylus*, *Bunostomum*, *Neoascaris* or *Moniezia*. After 40 to 50 days the egg counts had increased but by the end of the summer pasturing they had decreased to a greater degree than in cattle on similar valley pastures, falling from 56% to 22% at 1,100-1,400 metres and from 54% to 10% at above 1,400 metres. R.T.L.

(161c) Petroleum emulsion, as used for ascarids in horses, was given as a single dose of 5 gm. per kg. body-weight to 37 dogs infected with ascarids and tapeworms. 91% were cured without harmful effects. G.I.P.

(161d) The new glow-lamp trichinoscope III made by R. Winkel is described and illustrated. It gives an exceptionally light projection picture, is convenient to use and is suited to the official requirements for the detection of trichinae in meat. G.I.P.

162—Tijdschrift over Plantenziekten.

- a. OOSTENBRINK, M., 1955.—“Een inoculatieproef met het erwtenzystenaaltje, *Heterodera goettingiana* Liebscher.” 61 (3), 65-68. [English summary p. 68.]
 b. LAAN, P. A. VAN DER & BIJLOO, J. D., 1955.—“Bepaling van de vitaliteit van de cysteinhoud van het aardappel-cystenaaltje (*Heterodera rostochiensis* Woll.) door fluorochromeren met acridine orange.” 61 (3), 69-75. [English summary pp. 74-75.]

(162a) Peas of the variety Vares, which is resistant to *Fusarium oxysperum* and *F. solani*, were grown in pots of *Heterodera*-free soil. To these were added exact and increasing doses

of *Heterodera göttingiana* larvae after cleaning in a dilute mercury compound. The peas then showed gradual yellowing and retardation of growth. The poor growth and yellowing are due to, or accompanied by, loss of the nitrogen nodules and lack of protein and of chlorophyll. With the heavier inoculations the reproduction of eelworms decreased. The close correlation between the number of larvae inoculated and the rate of damage to the plant indicates that preventive measures could be based on the results of soil examinations. R.T.L.

(162b) When Homeyer's technique [for abstracts see Helm. Abs., 22, Nos. 238a & 474a], which consists of observing under a fluorescence microscope nematodes treated with the vital stain acridine orange, was applied to *Heterodera rostochiensis* cysts killed by hot water, dead eggs were coloured intensely with red, light green, yellow or white while living eggs were of a dark green colour with a red scale. Hatching tests in potato root diffusate and Bijloo's homogenizer method gave a very accurate analysis of the cyst contents. Cysts were treated with different lethal and sub-lethal doses of various nematicides and were tested by the fluorescence method and by the hatching test immediately after treatment and three months later. No clear difference was shown by the fluorescence method until three months after treatment when the percentage of kill was distinctly lower than that obtained by the use of the hatching test. Apparently the chemicals killed very slowly. It is concluded from these experiments that the fluorescence method did not afford a good viability test for the effect of nematicides. R.T.L.

163—Transactions of the American Microscopical Society.

- a. TERHAAR, C. J., 1955.—"On the cytology of certain cells of the cestode, *Hydatigera taeniaeformis* (Batsch, 1786)." 74 (2), 159-163.
- b. MEYER, M. C., 1955.—"Coenuriasis in varying hare in Maine, with remarks on the validity of *Multiceps serialis*." 74 (2), 163-169.
- c. GUILFORD, H. G., 1955.—"Gametogenesis in *Heronimus chelydrae* MacCallum." 74 (2), 182-190.
- d. HARGIS, Jr., W. J., 1955.—"Monogenetic trematodes of Gulf of Mexico fishes. Part V. The superfamily Capsaloidea." 74 (3), 203-225.
- e. CAMPBELL, W. C. & TODD, A. C., 1955.—"In vitro metamorphosis of the miracidium of *Fascioloides magna* (Bassi, 1875) Ward, 1917." 74 (3), 225-228.
- f. RIEDEL, B. B., 1955.—"The longevity and incidence of parasitic nematode larvae of cattle on fescue and ryegrass." 74 (3), 229-232.
- g. YOUNG, R. T., 1955.—"Two new species of *Echeneibothrium* from the stingray *Urobatis halleri*." 74 (3), 232-234.
- h. MACY, R. W., MOORE, D. J. & PRICE, Jr., W. S., 1955.—"Studies on dermatitis-producing schistosomes in the Pacific Northwest, with special reference to *Trichobilharzia oregonensis*." 74 (3), 235-251.

(163a) Terhaar, studying the cytology of *Hydatigera* [*Taenia*] *taeniaeformis* has demonstrated mitochondria and Golgi material in the parenchymal cells and in the muscle cells of the parenchyma. Mitochondria and a round nuclear inclusion which stained brilliant red with Altmann's technique occurred in the subcuticular cells but no Golgi material was present. S.W.

(163b) Meyer has studied coenuri, identified as *Multiceps serialis*, obtained from a varying hare in Maine. The entire cyst measured about 3.2 cm. in greatest length and was made up of a primary coenurus with daughter coenuri attached by a short pedicel or by a digitiform process; the daughter coenuri possessed scolices and tertiary external coenuri, or scolices alone, arranged in a linear series. He discusses the published work on the validity of the various species of *Multiceps* and is of the opinion that the morphological differences between the adults of *M. multiceps* and *M. serialis* are sufficient to justify the retention of the latter as a valid species. S.W.

(163c) Guilford has found that spermatogenesis in *Heronimus chelydrae* follows the same pattern as in other monoecious trematodes. There are three mitotic divisions followed

by the two maturation divisions resulting in clusters of 32 spermatids; the nucleus of each spermatid condenses to form a spermatozoon and this leaves the cytoplasm which degenerates. The haploid chromosome number in the spermatozoon is consistently 10. The process of oogenesis is similar; the sperm nucleus enters the oocyte in the oviduct and condensation of the bivalent chromosomes occurs later. Two polar bodies are formed. The metaphase of the first cleavage division occurs immediately after the breakdown of the pronuclear membranes and two cells, unequal in size, are formed. Successive divisions of these two cells result in the formation of a miracidium while the egg is in the uterus. S.W.

(163d) Hargis describes and figures a number of new monogenetic trematodes and annotates some forms already known from fish in the Gulf of Mexico. *Neoheterocotyle inpristi* n.g., n.sp., from the gills of *Pristis* sp., is distinguished from *Heterocotyle* by its body shape and by other characters. Dendromonocotylinae n.subf. is proposed for *Dendromonocotyle octodiscus* n.g., n.sp. from the skin of *Dasyatis say*; this new form differs from all other Monocotylidae in the dendritic form of the gut rami and from all but *Empruthotrema* by the absence of anchors. *Thaumatocotyle longicirrus* n.sp. was found on the skin of *D. say*, *T. retorta* n.sp. on the gills of *D. americana*, and *T. pseudodasybatis* n.sp. on the skin of *Aetobatus narinari*. *T. longicirrus* is distinguished from *T. retorta* by the shape of the ootype-uterus complex, the size and shape of the cirrus bulb and cirrus and the shape of the testis. *T. pseudodasybatis* is similar to *T. dasybatis* but is larger and has a bipartite pharynx. *Dionchus rachycentris* n.sp. from the gills of *Rachycentron canadus* is now regarded as distinct from *D. agazzi* and is differentiated from it. The subfamily Loimoinae is emended to include *Loimopapillosum dasyatis* n.g., n.sp. from the gills of *Dasyatis americana*; it has an elongate fusiform body and other distinctive characters. *Benedenia posterocolpa* n.sp. from the skin of *Rhinoptera quadriloba* is distinguished from *B. macrocolpa* mainly by the ovary which has an internal dendritic oviduct. *Entobdella corona* n.sp. from the skin and, more rarely, the gills of *Dasyatis* spp. differs from other species of *Entobdella* in having numerous antero-marginal head organs, the tip of the cirrus brush-like and in the possession of a curious structure which appears to be a giant binucleate cell lying between the ovary and testes. S.W.

(163e) Campbell & Todd have observed a number of miracidia of *Fascioloides magna* undergoing metamorphosis to sporocysts *in vitro*. The miracidia had been in contact with intermediate host tissue during experimental infections of snails. In the early stages of metamorphosis the miracidia constantly expanded and contracted but were always shorter than swimming miracidia. The epidermal plates swelled up and those of the posterior tiers lost their cilia, disintegrated and were sloughed off rapidly. Drops of secretion from the apical gland were visible at the anterior end. The anterior tier of epidermal plates were sloughed off and swam about actively by means of their cilia. The miracidium then gradually became transformed into the simple sac-like sporocyst. S.W.

(163f) Riedel has studied the effect of different types of pastures on the numbers of parasitic nematode larvae. One fescue pasture and one rye-grass pasture were grazed by steers with comparable worm burdens for five months before the observations were made. The numbers of nematode larvae per 12 lb. sample for fescue and rye-grass respectively were: 80 and 19 in May, 101 and 14 in June, 61 and 4 in July and 58 and nil in August. S.W.

(163g) Young describes and figures *Echeneibothrium urobatidium* n.sp. and *E. bi-lobatum* n.sp. from *Urobatis halleri*. *E. urobatidium* is one of the complex constituting *E. tumidulum* but differs from it in the form of the strobila, the larger number of proglottides and the smaller number of testes. *E. bi-lobatum* has unequally bilobed, stalked bothridia; each proximal lobe is divided into approximately 20 incomplete loculi, there being no median septum; the myzorhynchus is apparently absent; the proglottides number about 25 and there is no distinct neck. S.W.

(163h) Macy *et al.* have made a detailed study of the morphology, biology and life-history of *Trichobilharzia oregonensis*, a dermatitis-producing schistosome widespread in the Pacific Northwest. Mature worms differ from *T. elvae* in that the oral and ventral suckers are almost the same size whereas in *T. elvae* the ventral sucker is much smaller than the oral sucker, and in the much longer gynaecophoric canal. The eggs of *T. oregonensis* are straight and those of *T. elvae* are strongly curved. The maximum hatch of miracidia occurred in a dilution of about 6 gm. of faeces in 540 c.c. of water and the optimum temperature was between 30°C. and 35°C. About 6% of the local *Physa* were naturally infected. Experimental infections were produced in laboratory-bred *Physa* and in ducklings which appeared to be very tolerant of the infection. Individual snails showed considerable variation in the number of cercariae shed at any given time. The life span of mature worms is about four weeks. Out of 32 human volunteers exposed to cercariae, 13 developed dermatitis. S.W.

164—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. JORDAN, P., 1955.—"Bancroftian filariasis: an assessment of its economic importance in Tanganyika." 49 (3), 271-279.
- b. SYMES, C. B., 1955.—"Filarial infections in mosquitoes in Fiji." 49 (3), 280-282. [Comments by P. Manson-Bahr pp. 282-284.]

(164a) Jordan discusses bancroftian filariasis in Tanganyika with main reference to the published annual reports of the Filariasis Research Unit (1950 to 1953). Several tens of thousands of Africans were examined for elephantiasis and hydrocele and for microfilariae in the night blood. The endemic areas consisted of the southern end of Lake Victoria, the northern tip of Lake Nyasa and a wide coastal belt extending up the river valleys. In two endemic areas 200 out of 471 men who were questioned were suffering from hydrocele or elephantiasis or both sufficiently to miss work and these figures did not include severe cases, which are rarely accepted for employment by large concerns. In some districts over 30% of adult males had hydrocele. In those with hydrocele or elephantiasis of the legs, significantly higher weight and blood pressure were observed. Females with elephantiasis were also heavier. The extra weight usually more than accounted for the elephantoid part. Approximately 10% of 1,602 adult males at the Government Hospital of Mwanza in the endemic area of Lake Victoria had diseases attributable to *Wuchereria bancrofti*. Most of the surgical operations in the country were performed for hydrocele and hernia, the latter probably sometimes brought on by hydrocele and elephantiasis. The secondary diseases must cause a severe drain on the limited hospital resources in the Territory. Observations of the number of children conceived by men with hydrocele or elephantiasis of the scrotum showed that those with these diseases produced less children as age increased than did normal fathers. Histological studies of the testes of persons with elephantiasis of the scrotum invariably showed degenerative changes in which spermatogenesis had ceased. Statistics of abortions suggested that the rate is slightly higher in endemic filariasis areas. M.MCK.

(164b) Before directing an insecticidal campaign against mosquitoes in Fiji, Symes dissected 2,370 adult specimens, captured in houses and in the bush, in search of microfilariae of *Wuchereria bancrofti*. He found infected: 21.6% of 314 *Aedes (Finlaya) fijiensis*, 10% of 222 *Culex (Culex) annulirostris*, 4.8% of 583 *C. (C.) fatigans* and 2.8% of 828 *A. (Stegomyia) pseudoscutellaris* and *A. (S.) polynesiensis* considered together. In the laboratory 306 mosquitoes were fed on infected Fijians and the results suggested that *C. (C.) fatigans* and *A. (F.) fijiensis*, as well as *A. (S.) pseudoscutellaris*, are efficient carriers in Viti Levu. Manson-Bahr, in an addendum, compares these results with those of surveys elsewhere. He notes that two birds, *Molpastes haemorrhous bengalensis* and *Streptopelia chinensis tigrina*, which may carry filariae, have been introduced into Fiji in the last 30 years, and stresses that from the epidemiological point of view *A. (S.) pseudoscutellaris* and *A. (S.) polynesiensis* remain the most important vectors in Fiji. M.MCK.

164—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- c. SOLIMAN, K. N., 1955.—“Schistosomes from Egyptian and Sudanese camels.” [Demonstration.] 49 (4), 291.
- d. SOLIMAN, K. N., 1955.—“Immature stage of filariid (probably *Deraiphoronema evansi* (Lewis, 1882) Romanovitch, 1916).” [Demonstration.] 49 (4), 291.
- e. SOLIMAN, K. N. & LEROUX, P. L., 1955.—“Schistosomes from Sudanese cattle.” [Demonstration.] 49 (4), 291–292.
- f. LEROUX, P. L. & DARNE, A., 1955.—“The probable intermediary hosts of the pancreatic fluke (*Eurytrema pancreaticum*) in Mauritius.” [Demonstration.] 49 (4), 292.
- g. LEROUX, P. L. & DARNE, A., 1955.—“An Asiatic trichostrongylid *Mecistocirrus digitatus* (von Linstow, 1906) parasitizing cattle, sheep and goats in Mauritius.” [Demonstration.] 49 (4), 292.
- h. PITCHFORD, R. J. & LEROUX, P. L., 1955.—“Schistosomes from cattle in the Eastern Transvaal and Portuguese East Africa.” [Demonstration.] 49 (4), 292.
- i. PITCHFORD, R. J. & LEROUX, P. L., 1955.—“Schistosomes from the impala (*Aepyceros melampus*) in the Eastern Transvaal.” [Demonstration.] 49 (4), 292.
- j. LEROUX, P. L., 1955.—“Vectors of human bilharziasis in Africa.” [Demonstration.] 49 (4), 292.
- k. LEROUX, P. L., 1955.—“Game conservation and severe helminthiasis of the stock in national Game Reserves.” [Demonstration.] 49 (4), 293.

(164c) *Schistosoma bovis* was collected from the mesenteric veins of Baladi and Sudanese camels at the abattoir in Cairo. R.T.L.

(164d) Immature filariids were frequently encountered in the region of the kidneys of camels at the abattoir in Cairo. The head end resembles that of *Deraiphoronema evansi* but there are bosses at the extremity of the tail. R.T.L.

(164f) The distribution of *Eurytrema pancreaticum* in the Mascarene Islands coincides with the presence of the land snail *Macrochlamys indica* and the ant *Technomyrmex detorquens*. This suggests that they are respectively the first and second intermediate hosts. *E. pancreaticum* evidently reached Mauritius in infected herbivores. The Indian land snail was imported by Indian immigrants who use its mucus for bronchial complaints. R.T.L.

(164g) *Mecistocirrus digitatus* now recorded for the first time as a parasite of cattle, sheep and goats in Mauritius has been imported from the East. R.T.L.

(164h) Schistosomes collected from cattle at the abattoirs at White River, Nelspruit and Barberton in the Eastern Transvaal, and at Lourenço Marques in Portuguese East Africa were largely *Schistosoma matthei*. Some of the eggs were intermediate between *S. bovis* and *S. matthei*. Eggs were recovered from the wall of the urinary bladder of cattle at White River, Nelspruit and Barberton. R.T.L.

(164i) Uterine eggs identical with those of *Schistosoma matthei* occurred in specimens of schistosomes from three impala, *Aepyceros melampus*, in the Eastern Transvaal. This is the first record of a schistosome in an antelope in South Africa. R.T.L.

(164j) The identification and classification of molluscs in the areas of Africa where schistosomiasis is endemic, although desirable, should not delay their destruction as many of them are vectors of pathogenic trematodes of domestic and wild animals. R.T.L.

(164k) A zebra was found heavily parasitized with *Gastrodiscus aegyptiacus* and also infected with a number of other helminths. Heavy infection with several species of paramphistomes, *Schistosoma leiperi* n.sp. [for description see No. 164n below] and other helminths occurred in a red lechwe. An old male hippopotamus was heavily infected with paramphistomes and LeRoux is of the opinion that trematode infections may be responsible for the mortality in hippopotami reported in Uganda in the past. S.W.

64—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- l. LEROUX, P. L., 1955.—“*Schistosoma* sp. from a goat at Kisumu, Kenya.” [Demonstration.] 49 (4), 293.
- m. LEROUX, P. L., 1955.—“*Bulinus* (*Bulinus*) *cernicus* (Morelet) as vector of paramphistomids and *Schistosoma haematobium* in Mauritius.” [Demonstration.] 49 (4), 293.
- n. LEROUX, P. L., 1955.—“A new mammalian schistosome (*Schistosoma leiperi* sp.nov.) from herbivora in Northern Rhodesia.” [Demonstration.] 49 (4), 293–294.
- o. DISSANAIKE, A. S., 1955.—“Microsporidian infections in tapeworms: instances of hyperparasitism.” [Demonstration.] 49 (4), 294–295.
- p. McCLELLAND, W. F. J., 1955.—“The differentiation of some East African species of *Bulinus* likely to transmit schistosomes.” [Demonstration.] 49 (4), 295.
- q. McCLELLAND, W. F. J., 1955.—“Two species of *Bulinus* found naturally infected with a bovine schistosome in Western Kenya.” [Demonstration.] 49 (4), 295.
- r. YEH, L. S., 1955.—“A new filariid, *Gazellofilaria tanganyikae* gen. et sp. nov. with cuticular bosses.” [Demonstration.] 49 (4), 296.

(164l) The uterine eggs in a schistosome found in a goat slaughtered at Kisumu resembled those of *Schistosoma bovis* in some respects but those in the goat's caecum were not typical. R.T.L.

(164m) Cercariae from *Bulinus* (*B.*) *cernicus* taken from water-cress beds in the southern part of Mauritius developed in white mice into males indistinguishable from *Schistosoma haematobium*. Specimens of this mollusc collected near Port Louis were found infected with paramphistomid cercariae. In the Kisumu area of Kenya, *B. (B.) forskali* were naturally shedding mammalian schistosome cercariae. R.T.L.

(164n) *Schistosoma leiperi* n.sp., found in *Tragelaphus spekei selousi* and 20 other [unnamed] species of herbivora in Northern Rhodesia, has large characteristic eggs measuring $240\mu \times 45\mu$ to $300\mu \times 60\mu$ in the faeces. The males average from 5.5 mm. to 7.5 mm. and the females from 6.5 mm. to 8.5 mm. The testes number four to six. The ovary is equatorial. The cuticle bears bosses. White mice were experimentally infected from wild *Bulinus* (*Physopsis*) *africanus*. R.T.L.

(164o) About 15% of the *Moniezia expansa* and *M. benedeni* collected from sheep in England and *Moniezia* sp. from a buffalo calf in Pakistan were heavily infected with the microsporidian *Nosema helminthorum* Moniez, 1887. *Hymenolepis nana* in mice and rats were experimentally infected but the spores were smaller. R.T.L.

(164p) The form of the male copulatory organ in the East African species of the genus *Bulinus* appears to be of value in their differential diagnosis. The form of the shell in *B. (Physopsis)* *africanus* and *B. (P.) globosus* is often sufficient to distinguish them from one another but when the shells appear to be identical, the two species may be separated by the characteristic form of the copulatory organ. In *B. africanus* the penis sheath is coiled and is narrow near its junction with the preputium but greatly swollen proximally, whereas in *B. globosus* it is straight and about the same width throughout its length. In *B. (P.) nasutus* the shell has a more elongated and pointed spire while the copulatory organ is reduced to a small functionless structure. R.T.L.

(164q) Mice experimentally infected with cercariae from wild *Bulinus* (*Physopsis*) *africanus* and *B. (B.) forskali* collected near Kisumu in Kenya subsequently had long spindle-shaped schistosome eggs in the intestinal wall and schistosomes in the mesenteric veins. One of the mice infected from *B. (P.) africanus* had in addition eggs resembling those of *Schistosoma haematobium* recovered from the urine of local cases. R.T.L.

(164r) *Gazellofilaria tanganyikae* n.g., n.sp., from Thompson's gazelle from Tanganyika, is the first recorded filariid from the gazelle. The cuticle bears gross bosses like those of *Loa loa*. In the male the tail is alate; the left spicule, 0.259 mm. in length, has a twist and bend at about half way and then becomes considerably more slender. There are seven pairs

164—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- s. GORDON, R. M. & DUKE, B. O. L., 1955.—“Sections cut through the skin of an African infected with microfilariae of *Acanthocheilonema perstans* and *A. streptocerca*, at a time when a midge *Culicoides grahamii* was obtaining its blood meal.” [Demonstration.] 49 (4), 299.
- t. DUKE, B. O. L. & JAMISON, D. G., 1955.—“Sections cut through the skin of the face of an African whose blood contained a very high concentration of microfilariae of *Loa loa*.” [Demonstration.] 49 (4), 299.
- u. KERSHAW, W. E., LAVOPIERRE, M. M. J. & BEESLEY, W. N., 1955.—“Some observations on the intake of the microfilariae of *Dirofilaria immitis* by *Aedes aegypti*.” [Demonstration.] 49 (4), 299.
- v. KERSHAW, W. E., ROSS, J. A. & WEBBER, W. A. F., 1955.—“Calcification in nodules containing *Onchocerca volvulus*.” [Demonstration.] 49 (4), 300.
- w. WEBBER, W. A. F., 1955.—“A device which enables worms to be examined under a microscope in the head-on position without damage to the specimen.” [Demonstration.] 49 (4), 300.
- x. WRIGHT, A. I., 1955.—“A method for the concentration of living eggs of *Nematodirus* spp. from faeces and soil samples.” [Demonstration.] 49 (4), 300–301.
- y. GRIFFITHS, R. B. & BEESLEY, W. N., 1955.—“A technique for the collection of large numbers of *Schistosoma mansoni* ova.” [Demonstration.] 49 (4), 301.
- z. NICHOLAS, W. L. & MCENTEGART, M. G., 1955.—“The establishment of cultures of free-living nematodes in media free from micro-organisms.” [Demonstration.] 49 (4), 301–302.

of large lateral papillae of which five are pre-anal, one ad-anal and one post-anal. On the sides there are three to five very small post-anals of which the last two pairs are apparently fused. The female measures 175 mm. in length; the vulva is 1.78 mm. from the mouth; the oesophagus is 1.3 mm. long.

R.T.L.

(164t) In sections of the skin, microfilariae of *Loa loa* were seen lying within small blood vessels in the dermis. The endothelial cells were swollen and there was a marked perivascular infiltration of round cells, plasma cells and eosinophils. The overlying epidermis was thickened.

R.T.L.

(164u) Frequency distribution diagrams showed that the actual intake and the expected intake of the microfilariae of *Dirofilaria immitis* by *Aedes aegypti*, the population exposed and the canine population at risk are all related and are capable of mathematical analysis.

R.T.L.

(164v) X-ray photography of excised nodules of *Onchocerca volvulus* showed that calcification occurred in the adult worms rather than in the fibrous capsule.

R.T.L.

(164w) When the head of a worm is threaded through a small hole drilled in a microscope slide made of Perspex and so arranged that it projects about 1 mm. vertically upwards, while the rest of the worm is retained in a shallow chamber beneath the slide, and a coverslip is placed over the head its structure can be seen *en face* under the microscope.

R.T.L.

(164x) A modification of Willmott & Pester's technique for the recovery of paramphistome eggs from faeces is described which enables viable *Nematodirus* eggs to be recovered from faecal material and from soil relatively free from extraneous particles and other strongyle eggs.

R.T.L.

(164y) A procedure based on Willmott & Pester's technique is described whereby very large numbers of living *Schistosoma mansoni* eggs can be collected from the livers of experimentally infected mice.

R.T.L.

(164z) Two methods are described by which free-living nematodes can be obtained free from micro-organisms. Gravid females are killed by a chemical sterilizing agent, either by merthiolate or hydrogen peroxide, and then transferred to an innocuous medium rendered bacteriostatic by antibiotics. In this the ova hatch and the young worms are transferred to sterile culture media. The method has enabled the authors to maintain *Rhabditis axei* and *R. maupasi* for many generations in a medium prepared from autoclaved liver extract and lyophilized chick embryo extract.

R.T.L.

4—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- ba. TAYLOR, A. E. R. & SMILES, J., 1955.—“A study of microfilariæ (*Loa loa* and *Dirofilaria immitis*) by phase-contrast and ultra-violet microscopy.” [Demonstration.] 49 (4), 303.
- bb. BANGHAM, D. R., 1955.—“Antifilarial action of diethylcarbamazine investigated with C¹⁴ labelled drug.” [Demonstration.] 49 (4), 303–304.
- bc. JENNINGS, F. W., MULLIGAN, W. & URQUHART, G. M., 1955.—“Some isotopic studies on the blood loss associated with *Fasciola hepatica* infection in rabbits.” [Demonstration.] 49 (4), 305.
- bd. JENNINGS, F. W., MULLIGAN, W. & URQUHART, G. M., 1955.—“Immunity to *Dictyocaulus viviparus*, the bovine lungworm.” [Demonstration.] 49 (4), 306.
- be. STANDEN, O. D. & FULLER, K. A., 1955.—“The progress of degenerative changes in schistosomes following the treatment of experimental infections with *p*-aminodiphenoxalkanes.” [Demonstration.] 49 (4), 309.
- bf. ZAKI, A. A., 1955.—“A preliminary study of the effect of intensive doses of antimony on the heart.” 49 (4), 385–386.

(164ba) Microfilariae of *Loa loa* and *Dirofilaria immitis* can be obtained free from red blood corpuscles and undamaged, without centrifugation, by placing a drop of infected blood in a pool of human serum within a metal ring sealed by vaseline to a slide. A coverslip is placed over the ring. After the preparation has been left for about ten minutes the red cells settle. The microfilariae, free in the clear serum, can be picked up by a micropipette in a minute drop of serum which is then placed on a small agar pad on a glass slide. The pad protects the microfilariae when a coverslip is placed on the preparation. Such preparations may be viewed by phase contrast microscopy or by ultra-violet light if quartz, instead of glass, is used. R.T.L.

(164bb) Although microfilariae are apparently unaffected for long periods by diethylcarbamazine in concentrations up to 1% *in vitro*, there is a reduction of about 80% in the circulating microfilariae within two or three minutes when the drug labelled with C¹⁴ is injected intravenously into cotton-rats infected with *Litomosoides carinii*. R.T.L.

(164bc) Red cells labelled with ³²P and plasma proteins labelled with ¹³¹I were injected intravenously into rabbits infected with *Fasciola hepatica* and into controls. An hour later the rabbits were killed. The radioactivity of the flukes was very much higher than that of the bile from the normal or the infected animals. When the radioactivity of the flukes was compared with that of the blood, the figures indicated that, with the ³²P-labelled cells, the blood loss approximated 0.2 ml. blood per fluke per 24 hours. This was consistent with the degree of anaemia shown by the infected animals. A lower figure resulted when ¹³¹I-labelled proteins were injected. When both ³²P and ¹³¹I were injected simultaneously, the ³²P/¹³¹I ratio in the flukes was higher than that in the blood. R.T.L.

(164bd) Immune serum was obtained from cattle which had recovered from a field infection with *Dictyocaulus viviparus* and had subsequently been subjected to experimental reinfection. In an experiment with seven immunized and seven control calves the immune serum gave marked protection against a challenging infection with 4,000 larvae. In the immunized animals there was a relative absence of respiratory symptoms, a reduction in the extent of the gross lesions and the average number of worms recovered was only 37.4 as compared with 786 in the controls. S.W.

(164be) Specimens of *Schistosoma mansoni* taken from the liver of infected mice which had been treated with 1:7-bis(*p*-dimethylaminophenoxy)heptane were invested by phagocytes. This commenced on the mid-portion and extended anteriorly and posteriorly. Although the associated degenerative changes are not peculiar to the *p*-aminodiphenoxalkanes, they are more easily studied in these drugs owing to their high potency and rapid action. R.T.L.

(164bf) Zaki, having studied the E.C.G. changes in 25 schistosomiasis patients who had been given repodral twice daily for four days, concludes that the use of intensive antimony treatment, either in hospital practice or in field work, is not advisable. R.T.L.

165—Veterinariya.

- a. MASHIROV, E. T., 1955.—[Trichinella in wild animals in the Tartar Republic.] **32** (1), 36–39. [In Russian.]
- b. BELYAEVA, M. Y., 1955.—[Natural foci of trichinellosis.] **32** (1), 39–40. [In Russian.]
- c. SKRYABIN, K. I., 1955.—[Helminthology in Poland.] **32** (2), 10–13. [In Russian.]
- d. PANASYUK, D. I., 1955.—[New aspects of the epizootiology of dictyocauliasis in sheep.] **32** (2), 44–46. [In Russian.]
- e. KOKUSEV, I. K., 1955.—[Carbon tetrachloride for fascioliasis in sheep.] **32** (2), 46–49. [In Russian.]
- f. ANTIPIN, D. N., 1955.—[Practical scientific aid for collective farms in controlling helminthiasis in farm animals.] **32** (3), 10–13. [In Russian.]

(165a) On examination of 328 wild fur-bearing animals from the Tartar Republic, mainly fox and mink, 33 were found infected with *Trichinella*. Mashirov concludes that there are two cycles of infection among these animals, maintained by eating either similar wild animals, or domestic animals (e.g. dogs, cats, rats, mice and pigs). G.I.P.

(165b) In Białowieża forests *Trichinella* infection was found in wolves, foxes, shrews and moles, and in mice and rats in the inhabited parts. It was absent in 81 wild boars. Shrews and moles are thought to be the main source of infection for wild carnivores. G.I.P.

(165d) Percutaneous infection occurred in four out of five lambs when sterile faeces containing infective larvae of *Dictyocaulus filaria* were applied to the skin in the abdominal region and to shaved parts of the shoulders for several hours. This fact should be taken into consideration in control measures. The conditions prevailing when lambs are housed during the winter favour at times the development of infective larvae. G.I.P.

(165e) Pure carbon tetrachloride administered subcutaneously in normal therapeutic doses to 98 sheep with *Fasciola* reduced the infection to 4.3% without harmful effects. This method proved very convenient and was used for mass treatment of sheep and goats in the Novgorodsk region. G.I.P.

166—Veterinarski Arhiv.

- a. MARTINČIĆ, M., 1955.—“Prilog patohistologiji ligamentum nuchae konja (*Onchocerca reticulata*).” **25** (3/4), 49–55. [English & German summaries pp. 54–55.]
- b. WINTERHALTER, M. & DELAK, M., 1955.—“Parenteralna aplikacija tetraklormetana (carboney tetrachloridum). III. Supkutana aplikacija tetraklormetana kod ovaca.” **25** (3/4), 68–74. [English & German summaries pp. 73–74.]
- c. MIKACIĆ, D., 1955.—“Istraživanje metiljavosti. VIII. Nova nalazišta galbe i osvrt na epizootološku važnost nekih nalazišta.” **25** (3/4), 75–91. [French & German summaries pp. 90–91.]
- d. CAREVIĆ, O., 1955.—“Djelovanje izoamilnog estera bademove kiseline na velikog metilja (*Fasciola hepatica*) in vitro.” **25** (3/4), 92–96. [English & French summaries p. 96.]

(166a) Histological examination of 42 cervical ligaments of horses at Zagreb showed that 36 were infected with *Onchocerca reticulata*. The worms were well preserved, calcified or petrified, causing sometimes a sclerotic reaction but more frequently inflammation along the parasitic channels. There were also peculiar pathological processes in the infected tissue but their origin was not clear as they were not apparently associated with the parasites. G.I.P.

(166b) To test whether carbon tetrachloride was less toxic to sheep when given subcutaneously than when given orally, 27 sheep were injected with 5 c.c. of a 3:1 mixture of the anthelmintic and liquid paraffin. The only changes observed were degeneration of the liver epithelium, which became marked on the third day with regeneration starting on the fourth day after application, and a more lasting inflammatory effect. Ten pregnant sheep with *Fasciola hepatica* infections were successfully treated subcutaneously; the sheep behaved normally after the treatment. At autopsy, partly decomposed flukes were found in the large bile-ducts. The flesh and organs of the sheep did not smell of carbon tetrachloride. G.I.P.

(166c) During a study of the epizootiology of fascioliasis, three kinds of cercariae were found in 1,542 *Limnaea truncatula* collected in Yugoslavia. Thirty-three of the molluscs contained rediae and cercariae of *Fasciola hepatica*, 17 had rediae and cercariae of an echinostomid and in 16, and probably 33 more, there were xiphidiocercariae. A new expression "galbism" is used to indicate the importance of snails in a locality. Galbism in the first degree signifies that the snails were being exposed to miracidial and the livestock to metacercarial infection. Galbism in the second degree indicates conditions where the snails could be infected but that the cercariae cannot reach their definitive host, livestock. In galbism of the third degree the molluscs are present but there is no likelihood of infection by *F. hepatica* miracidia.

G.I.P.

(166d) *Fasciola hepatica* were suspended in Ringer's solution at 39°C. to which 0.004% to 0.24% of the isoamyl ester of amygdalic acid was added. Their movements were inhibited by 0.008%. An emulsion containing 0.04% and a suspension of 0.24%, adsorbed on Venetian talc, produced irreversible paralysis directly proportional to the length of time the flukes were immersed.

G.I.P.

167—Veterinarski Glasnik. Belgrade.

- a. NEVENIĆ, V., PETROVIĆ, K., ŠIBALIĆ, S., CVETKOVIĆ, L. & ANGELOVSKI, T., 1955.—"Naša iskustva u borbi sa ehinokokozom u srezu Ljubičko-Trnavskom (Čačak). I. Arekolinizacija pasa." 9 (2), 86-98. [French summary p. 98.]

(167a) The authors have found hydatid to be widespread in Yugoslavia. In certain villages in Dalmatia the incidence in the inhabitants reaches 4% and only Slovenia is comparatively free. In some areas 94.5% of domestic animals and up to 35.5% of the dogs are infected. They describe the treatment of 5,702 dogs with arecoline hydrobromide which was usually well tolerated and effective. Future control measures include education of the people and twice yearly treatment of dogs.

S.W.

168—Veterinary Medicine.

- a. DENNIS, W. R., SWANSON, L. E. & STONE, W. M., 1955.—"Experimental feeding of low level phenothiazine to Florida cattle." 50 (9), 379-389, 392.
b. BRADLEY, R. E., 1955.—"Observations on the anthelmintic effect of piperazine citrate in chickens." 50 (10), 444-446.

(168a) Phenothiazine at the rate of 1 gm. to 1 lb. cane or citrus molasses, mixed daily, proved a satisfactory mixture for low level intake. Some of the cattle which had received an initial therapeutic dose would not take the drug mixed in the feed for the first ten days. A few would not take low level phenothiazine mixtures and a small number consumed too much or were sensitive to the drug; the latter developed a rough coat, were sluggish and had a poor appetite. Low level phenothiazine effectively controlled *Haemonchus contortus*, *Oesophagostomum radiatum* and *Bunostomum phlebotomum*. It had little effect on *Cooperia* spp., *Trichostrongylus axei* or *Ostertagia ostertagi* and none on *Trichuris discolor*, *Moniezia*, *Strongyloides*, *Dictyocaulus viviparus*, *Fasciola hepatica* or *Cotylophoron cotylophorum*. Although low level phenothiazine reduced pasture contamination, the number of larvae present in faecal samples increased rapidly as soon as the drug was withdrawn.

R.T.L.

(168b) Piperazine citrate given in the drinking water proved a very effective anthelmintic against *Ascaridia galli* in fowls. Two flocks of commercial broilers containing 15,600 and 17,900 birds respectively were each divided into two equal groups, one group of each flock being used as controls. One flock was treated at eight weeks of age with 8 gm. piperazine per gallon of water for 60 hours and the other at six weeks of age with 6 gm. per gallon for 24 hours. Treated birds of both groups had strikingly lower infections when examined post mortem than had the controls. Sick, parasitized birds drink water even when they refuse food so that this method of administration ensured them getting the anthelmintic.

D.M.

169—Veterinary Record.

- a. BRANAGAN, D., 1955.—“The toxicity of hexachloroethane.” [Correspondence.] 67 (23), 440.
- b. TAYLOR, E. L. & MICHEL, J. F., 1955.—“Controlled trial of a proprietary husk remedy.” 67 (33), 612–613.
- c. POYNTER, D., 1955.—“The efficiency of piperazine adipate administered in bran mash to horses.” 67 (34), 625–626.
- d. ALLCROFT, R., SALT, F. J. & HIGNETT, S. L., 1955.—“The effect of commercial phenothiazine on blood iodine values in sheep.” 67 (34), 626–630.
- e. DOWNING, W., KINGSBURY, P. A. & SLOAN, J. E. N., 1955.—“Critical tests with piperazine adipate in horses.” 67 (35), 641–644.
- f. TAYLOR, E. L., 1955.—“‘Infect’ or ‘infest’?” [Correspondence.] 67 (36), 681.
- g. WILKINSON, G. T., 1955.—“A case of heavy whipworm infestation in a dog and its successful treatment.” 67 (40), 754–755.

(169a) In a comment on Bywater's letter on hexachlorethane poisoning in cattle and sheep [for abstract see Helm. Abs., 24, No. 51], Branagan states that toxic symptoms can be countered by administering dextrose orally or subcutaneously. M.MCK.

(169b) Taylor & Michel have tested Strongylin, a reputed remedy for parasitic bronchitis. They infected each of eight calves with 4,000 larvae of *Dictyocaulus viviparus*. Twenty-three days later all were showing symptoms of husk and one died. The recommended dose of 30 c.c. of Strongylin in half a pint of water was then administered orally to four. This was repeated on the 26th day. As controls the remaining three received half a pint of water at the times of treatment. On the 28th day one of the dosed calves died. The remaining animals were slaughtered on the 29th day. Worm counts showed an average of 827 worms in the untreated calves and 792 in the dosed calves. This small difference is attributed to the large number (2,786) in the calf which died before the grouping of the calves into dosed and undosed groups. The second and third largest counts (2,158 and 610) were observed in dosed calves. M.MCK.

(169c) Piperazine adipate was administered in bran mash, instead of by stomach tube, to nine horses with strongyles and ascarids at the dosage rate of 60 gm. or 70 gm. This reduced the strongyle egg counts to a maximum of 21 e.p.g. where previous counts had ranged up to 500. Ascarid egg counts were reduced to zero. The results compare favourably with those hitherto recorded for administration by stomach tube. M.MCK.

(169d) During determinations of the total iodine levels in the plasma of 12 grazing ewes, abnormally high values were noted from December to April. This coincided with the period of dosing with phenothiazine which contains iodine as an impurity. Analyses of various commercial phenothiazine preparations revealed iodine contents ranging from 0.0004% to 0.4%. A series of blood tests was then performed immediately before administration of phenothiazine and during the three succeeding weeks. Four ewes each given 30 gm. of phenothiazine with 0.0004% of iodine showed a slight but definite increase in both total and protein-bound plasma iodine levels after seven days. The values were normal when blood tests were repeated 40 days later. Phenothiazine with 0.37% of iodine was then administered to two of the ewes at the rate of 20 gm. each. This markedly increased total iodine values for nine days. The maximum levels, 40 µg. per 100 ml. and approximately 29 µg. per 100 ml., were observed one day and seven days after dosing respectively; three weeks after administration the total values were still a little above the pre-dosing level of about 3 µg. per 100 ml., and protein-bound levels which had increased only slightly were still above normal. Finally, eight ewes given 20 gm. of phenothiazine with the high iodine content showed average total iodine levels of 15 µg. per 100 ml. three days after administration as compared with 5.1 µg. per 100 ml. in eight controls given a copper and nicotine sulphate anthelmintic mixture. The authors are investigating the possibility of adverse effects from continued dosing with phenothiazine of a high iodine content. M.MCK.

(169e) This paper amplifies a preliminary report already published by Sloan, Kingsbury & Jolly [for abstract see Helm. Abs., 23, No. 435c] on experimental work with piperazine adipate in horses. This drug is shown to be a highly efficient and safe anthelmintic for horses, which when used at the rate of 10 gm. per 100 lb. body-weight removes nearly 100% of adult and immature *Parascaris equorum* and adult *Trichonema* spp., 80% or more of adult *Oxyuris* spp., and 50%–60% of *Tridontophorus* spp. and *Strongylus vulgaris*. It does not appear to be effective against *S. edentatus* and *S. equinus*, *Habronema* spp. or anoplocephalid tapeworms. When used against horse redworms, the results approximate to those achieved by a 30 gm. dose of phenothiazine but with a smaller risk of toxic idiosyncrasies. The effect of the drug against immature and mature ascarids may make possible the elimination of these parasites from breeding studs. Maximum normal dosage appears to be 80 gm. but in special circumstances it is possible even to treble this amount. D.M.

(169f) Taylor points out that the worker with macroscopic organisms has a legitimate claim to the use of both infect and infest; he should "refer to *infecting* his experimental animals with lice or worms and observing the *infestation* that results". S.W.

(169g) An English dog having a heavy infection with *Trichuris vulpis* was successfully treated by a dose of three tablets, each containing 0.912 gm. of phthalofyne (3-methyl-1-pentyn-3-yl-acid phthalate), after fasting for 24 hours. The whipworms were badly macerated. The faecal egg count dropped from 18,650 e.p.g. to 200 e.p.g. a week after treatment. Seven weeks later the dose was repeated and following this the faeces showed no *Trichuris* ova. R.T.L.

170—Wiener Medizinische Wochenschrift.

- a. HEINZ, E., 1955.—"Die Behandlung der Askarideninfektion mit Vermoxyl (Piperazin-hexahydrat)." 105 (5), 108–109.

(170a) Thirty children (aged from one-and-a-half to 13 years) were treated for ascariasis with Vermoxyl, a syrup containing 10% piperazine hexahydrate. The treatment was for from four to eight days; the dose for children under six years of age was two teaspoonfuls twice daily (approximately 3 gm. piperazine hexahydrate) and for older children approximately 4 gm. daily. Vomiting occurred in three but did not impede the action of the drug. All but six eliminated the infection. Heinz recommends a second course of treatment five or six weeks after the first. In one child an ascarid larva was surgically removed from the anterior chamber of the eye. M.MCK.

171—Wiener Tierärztliche Monatsschrift.

- a. BAUMANN, R., 1955.—"Beobachtungen über das Vorkommen von *Parafilaria multipapillosa* in Österreich." 42 (3), 168–170. [English, French & Italian summaries pp. 169–170.]

(171a) Baumann describes summer bleeding in horses caused by *Parafilaria multipapillosa*. He gives the diagnosis, discusses possible transmission by flies and reports a case from the Austrian Tyrol. M.MCK.

172—Yonago Acta Medica.

- a. HARADA, Y. & MORI, O., 1955.—"A new method for culturing hook-worm." 1 (3), 177–179.

(172a) Harada & Mori have devised a simple technique for culturing hookworm larvae. The faecal material is smeared on to a strip of filter paper which is inserted into a small test-tube containing 2 c.c. to 3 c.c. of tap-water and incubated at 20°C. to 30°C. The filter paper is moistened by capillary action and on hatching the larvae move down into the water where they are easily detectable. This method can also be extended to large scale culture. Using this method infections were detected in 56.83% of 234 cases compared with 12.39% and 29.31% revealed by direct smear and brine flotation respectively. S.W.

173—Zeitschrift für Ärztliche Fortbildung.

- a. RUDAT, K.-D., 1955.—“Erfahrungen mit Mapha-Vermexan, einem Oxyurenmittel auf Hexachlorcyclohexanbasis.” 49 (3), 96–98.

(173a) Rudat reports on the value of Mapha-Vermexan (a technical mixture of benzene hexachloride containing 12% to 15% of the gamma isomer) in the treatment of oxyuriasis. Adults were given two dragées of 0.04 gm. each three to four times daily before meals, plus a suppository of 0.05 gm. after every defaecation. The dose for children under three was one dragée per day and one suppository every morning and evening. Treatment continued for from five to six days. Of 48 patients treated, 45 were free from infection after one course of treatment. Of the 37 patients who were available for further examination, 32 were still negative after three to four months. The substance was well tolerated and there were no contra-indications. The author emphasizes that strict personal hygiene must accompany anthelmintic treatment. A.E.F.

174—Zeitschrift für Parasitenkunde.

- a. OSCHE, G., 1955.—“Bau, Entwicklung und systematische Bedeutung der Cordons der Acuariidae (Nematoda) am Beispiel von *Stammerinema soricis* (Tiner 1951) gen.nov.” 17 (2), 73–92.
- b. FRENZEN, K., 1955.—“Beitrag zur Morphologie und Synonymie von *Ascaridia galli* Schrank 1788. I. Mitteilung.” 17 (2), 93–105.
- c. KREIS, H. A., 1955.—“*Contracaecum septentrionale*, ein neuer Parasit aus dem Kormoran; sein Lebenslauf, sowie Angaben über die Entwicklung der Anisakinae. (Beiträge zur Kenntnis parasitischer Nematoden XVI.)” 17 (2), 106–121.
- d. BOCH, J., 1955.—“Zur Histopathologie der Magenwurmseuche der Hühner.” 17 (2), 131–137.
- e. OSCHE, B., 1955.—“Über Entwicklung, Zwischenwirt und Bau von *Porrocaecum talpae*, *Porrocaecum ensicaudatum* und *Habronema mansonii* (Nematoda).” 17 (2), 144–164.

(174a) Osche creates *Stammerinema* n.g. for *Dispharynx soricis* Tiner, 1951. The new genus is characterized by the form of the cordon, by the pear-shaped enlargement of the head end, by two lateral rows of spines, and by a mammalian host. *S. soricis* is recorded, for the first time in Germany, from *Sorex araneus*, *S. minutus* and *Neomys fodiens* (the two latter being new host records). *Synhimantus rhopalcephalus* Sohtys, 1952 is reduced to the synonymy of *Stammerinema soricis*. On the basis of his study of the morphology and development of the cordons among the Acuariidae (which is reported in detail) Osche also considers *Dispharynx* to be a synonym of *Synhimantus*, since a typical “Dispharynx form” of cordon later develops into a “Synhimantus form”. He further makes the Echinuriinae a synonym of the Acuariiinae and recognizes three subfamilies (Acuariiinae, Streptocarinae and Schistorophinae) of the Acuariidae. A key to the genera of the Acuariiinae is provided. A.E.F.

(174b) After detailed study of the literature, and on the basis of the specific characteristics of the caudal papillae, Frenzen confirms Baylis' (1932) view that *Ascaridia perspicillum*, *A. lineata* and *A. galli* are one and the same species and that, by the priority law, *A. galli* is the valid name. An examination of specimens of *A. galli* from the domestic fowl in Germany, Sardinia, Pakistan and Indonesia has revealed differences in lip size, body proportions and the form of the spicules and Frenzen suggests that several subspecies or local races may have to be recognized. Specimens from Java are named *A. galli javanensis* n.subsp. A total of 28 synonyms of *A. galli* is listed. A.E.F.

(174c) Kreis describes and figures adult and larval forms of *Contracaecum septentrionale* n.sp. from the stomach of *Phalacrocorax aristotelis*. The specimens came from Iceland. The new species is closest to *C. travassosi* but can be distinguished by the greater length of the spicules. From a study of what is known of the life-history of other Anisakinae and his own findings with this species, Kreis constructs the probable life-history of *C. septentrionale*. Eggs dropped into water with faeces are taken up by a fish in which the infective larvae (armed with a spine) develop. The fish is either eaten by another fish, in which case the worms do

not develop further, or by a cormorant. The larvae do not apparently migrate in the final host: there is an ecdysis in the stomach of the bird to the 4th-stage larvae, provided with teeth, from which the adults develop. A.E.F.

(174d) Boch describes the histopathology of *Acuaria hamulosa* infection in the stomach of the domestic fowl. In addition to mechanical injury to the muscle, caused by migrating larvae and the adult worms, disintegration of muscle fibres occurs. At the same time inflammatory processes in the interstitium with cell infiltration and proliferation lead to the formation of nodules, the various forms of which are described in some detail. The affected bird eventually dies because digestion becomes impossible. The worms are too deeply embedded in the musculature to be affected by anthelmintics and suitable hygienic measures alone offer prospects of reducing infection. A.E.F.

(174e) Osche fed 21 larvae of *Porrocaecum talpae* (Schrank, 1788) from *Neomys fodiens* to a buzzard known to be free of worms. On the 20th day after feeding typical *Porrocaecum* ova were recovered from the bird's faeces: four days later the buzzard was killed and five adult *Porrocaecum* were found in the small intestine. Since these adults proved to be specimens of *P. angusticolle* (Molin, 1860) this name must become a synonym of *P. talpae*. Both larval and adult forms are described with special reference to the lips which vary in form between fresh and preserved specimens. Larvae of *P. ensicaudatum*, recovered from the earthworm *Lumbricus herculeus* and easily distinguished by an extremely short intestinal caecum, are described for the first time. In the absence of a suitable host it was not possible to carry out feeding experiments with the larvae. Both adults and larvae of *Habronema mansioni* were found in a single specimen of *Falco tinnunculus*: 17 of the larvae were fed to a buzzard and 12 days later five adult *H. mansioni* were recovered. A detailed study of the lips of this nematode was made and the contradictory statements of earlier workers discussed. A.E.F.

175—Zeitschrift für Wissenschaftliche Zoologie.

- a. GERLACH, S. A., 1955.—"Zur Kenntnis der freilebenden marinen Nematoden von San Salvador." 158 (2/4), 249-303.
- b. FRENZEN, K., 1955.—"Studien zu den Problemen der Zellkonstanz: Untersuchungen an *Ascaridia galli* Schrank 1788." 158 (2/4), 304-340.

(175a) Gerlach reports on 952 marine nematodes (representing 60 species) collected on the Pacific shores of San Salvador in 1952 by Prof. Remane of Kiel. Among the nematodes described and figured are the following new species: *Platycomopsis curiosus* n.sp., *Halalaimus supercirrhatus* n.sp., *Trefusia varians* n.sp., *Trileptium salvadoriense* n.sp., *Oncholaimus longispiculosus* n.sp., *Prooncholaimus armiger* n.sp., *Paracyatholaimus paucipapillatus* n.sp., *Longicyatholaimus trichocauda* n.sp., *Halichoanolaimus chordiurus* n.sp., *Gammanema cancellatum* n.sp., *Metachromadora spiralis* n.sp., *Aegialoalaimus amphibulbosus* n.sp., *Microalaimus oblongilaimus* n.sp., *Spilophorella meyer-abichi* n.sp., *Comesoma heterosetosa* n.sp., *Pseudolella polita* n.sp., *Diodontolaimus tenuispiculum* n.sp., *Rhabdocolima articularum* n.sp., *Terschellingia papillata* n.sp., *Theristus metaflevisensis* n.sp., *T. coronatus* n.sp., *Steineria paramirabilis* n.sp., *S. punctata* n.sp., *Tricoma uncinatum* n.sp. The large number of new species is partly explained by the fact that the Pacific coast of America has been little studied in the past. A.E.F.

(175b) Frenzen continues his work on *Ascaridia galli* of German and Indonesian origin with a study of their cell constancy. Worms from both countries have a total of 80 nuclei in the oesophagus although the distribution is slightly different (German specimens have 27 muscle and 37 nerve nuclei, while the Indonesian figures are 24 and 40 respectively). There are some 33,000 cells in the mid-intestine of German specimens but only about 17,000 in the Indonesian. Frenzen points out that the study of cell constancy can be of taxonomic significance. He considers it likely that the Indonesian form of *A. galli* is the original and that the European form developed from it: more detailed research will be necessary, however, before this question can be decided. A.E.F.

NON-PERIODICAL LITERATURE

- 176—POPOVA, T. I., 1955.—[Principles of nematology, edited by K. I. Skryabin. Vol. V. Strongyloidea of animals and man. Strongylidae.] Moscow: Izdatelstvo Akademii Nauk SSSR, 223 pp. [In Russian.]

This monograph on the Strongyloidea will appear in several volumes in the series "Principles of Nematology". This volume is divided into two parts; the first part contains a comparative account of the morphology, biology, oecology, geographical distribution and medical and veterinary importance of the superfamily, together with proposals for a revised classification; the second part consists of a detailed systematic study of the Strongylidae. There are 100 text figures reproduced from various authors, ten maps, a host-parasite list, alphabetical lists of genera and species and an extensive bibliography.

R.T.L.

- 177—UNITED STATES DEPARTMENT OF AGRICULTURE, 1955.—"Index-catalogue of medical and veterinary zoology. Supplement 4. Authors: A to K." Washington, D.C.: U.S. Government Printing Office, pp. 845-970.